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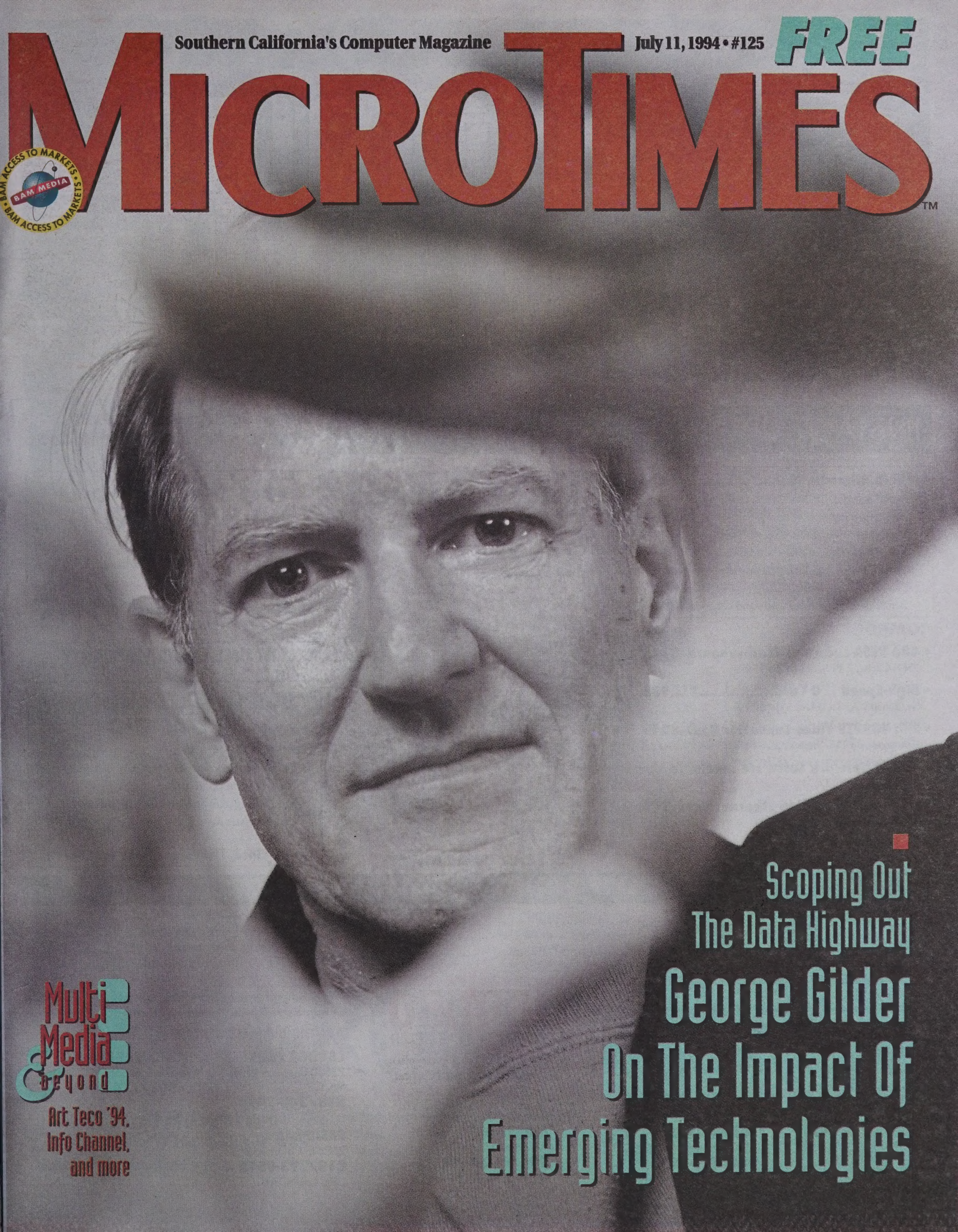

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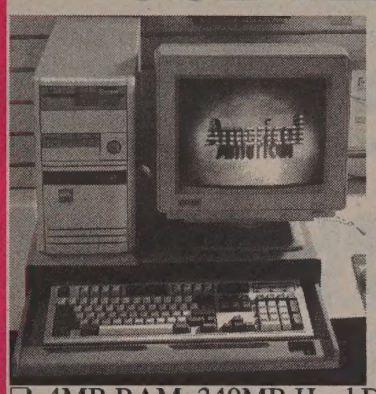

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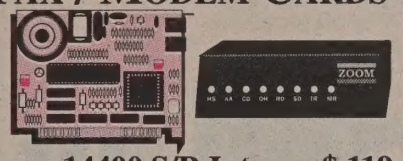

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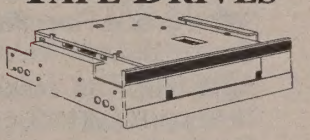

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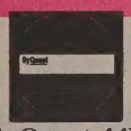

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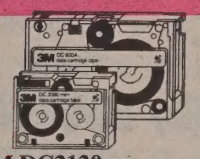

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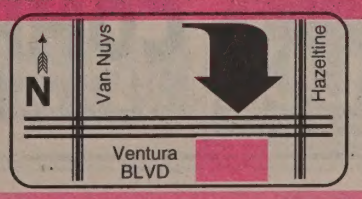

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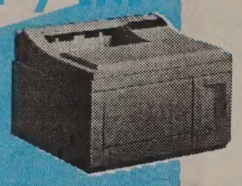

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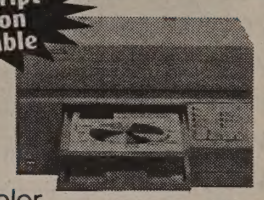

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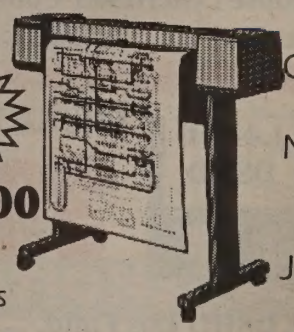

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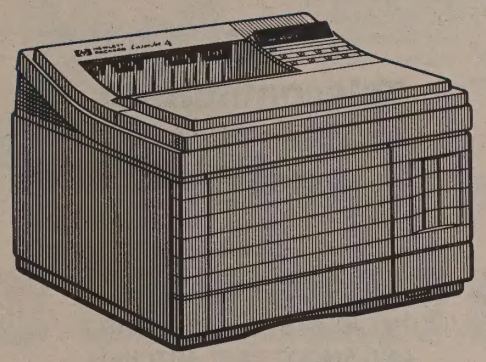

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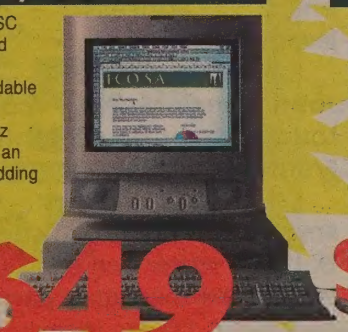

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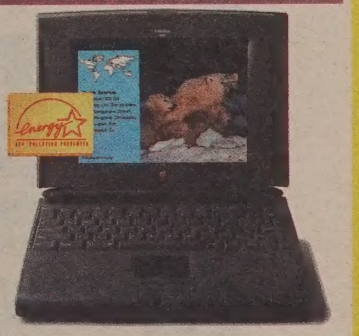

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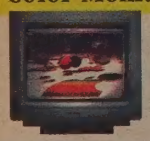

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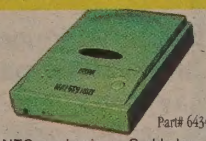

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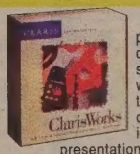

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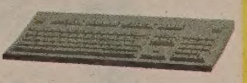

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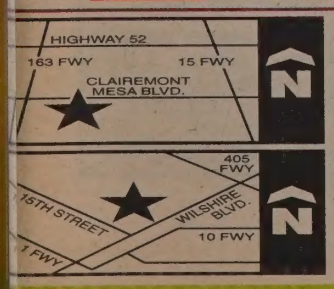

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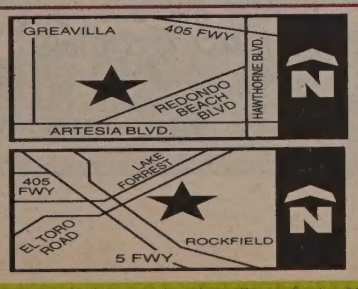

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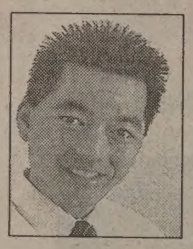

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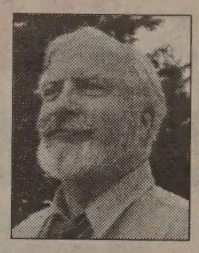

Jim Warren organized and chaired the First Conference on Computers, Freedom & Privacy (1991), received the Electronic Frontier Foundation Pioneer Award in its first year (1992), led the recent successful effort to make state legislation and statutes available via the public nets without state charge, and received the James Madison Freedom-of-Information Award from the Society of Professional Journalists—Northern California (1994). He also serves on Autodesk's board of directors.

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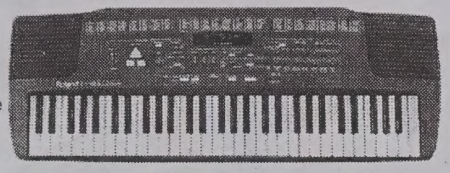

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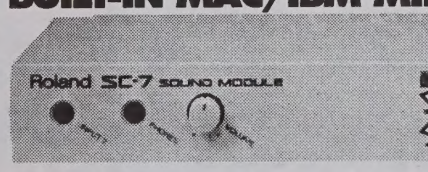

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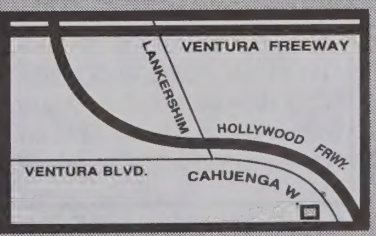

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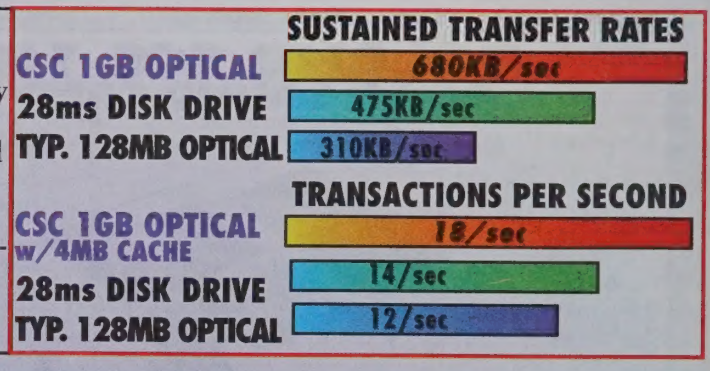

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BY PAUL HOFFMAN

Industry Insight

Microsoft And Stac Settle Suit, Cross-License Patents

In a decision that will benefit both PC users and both companies, Microsoft and Stac have agreed to cross-license their patents to each other. At the same time, Microsoft will pay Stac over $100 million over time. The result of the settlement won't change the MS-DOS market much: almost all new PCs will still come out with MS-DOS 6.22 with Microsoft's DriveSpace technology (as compared to v6.0 and 6.2 which came with DoubleSpace).

Because of the settlement, future version of MS-DOS and Stac's Stacker programs will also probably have software that allows them to convert drives that have been compressed with either DriveSpace, DoubleSpace, or Stacker. The patent cross-licensing is for all current patents as well as for compression patents issued in the next five years, giving Stac plenty of time to come up with other products. Stac is now in a much better position to offer its technology to other operating system companies, like IBM and Novell.

The Intel-HP Alliance: This Is Not Your Father's CPU

The struggle for the PC desktop in 1999 has already begun among the CPU manufacturers; the only thing that's clear is that the winner will be able to run Microsoft Windows v6, whatever that will be. All chip makers are trying to determine the best strategy for the next five years, one that incorporates the ability to run today's programs as well as tomorrow's advanced operating systems, all at high speeds. Although it will remain hard to predict the winners in the next few years, today's PC users are already starting to see how the various companies will position themselves.

The first major move towards the future came earlier this year with the release of the PowerPC systems from Apple and IBM. PowerPC will likely become the most popular RISC (reduced instruction set CPU) chip used in desktop PCs within a year, displacing the SPARC chip made popular by Sun Microsystems. IBM and Motorola are keeping the prices on PowerPC chips very low, and they are working hard to make people think of the PowerPC as a serious competitor to Intel's Pentium.

The recently announced agreement between Intel and Hewlett-Packard is the second major move. The partnership will create the next-generation CPU that will run today's software and will, presumably, run future software that's optimized for the chip at very high speeds. This family of chips will be manufactured by both companies starting in approximately 1998. The companies said almost nothing about the technologies that will go into the chips, but they are likely to be based on the vast experience of both Intel and HP. Intel's previous forays into the RISC field have been resounding failures.

At first, the Intel-HP alliance may seem strange, since HP's current RISC offering, the PA-RISC series, is not all that successful in the market. Although PA chips are good performers, they haven't been widely adopted, and few believe there's much that can be done in the next few years to make them much faster than their competitors.

On the other hand, HP has discussed dropping RISC over time in favor of a new concept, the very long instruction word (VLIW) CPU. HP would presumably make a VLIW CPU that ran PA-RISC software at fairly reasonable speeds, much like Apple runs 68000-based Macintosh software on the PowerPC.

By becoming partners with HP instead of a RISC manufacturer, Intel is likely to create its next generation of CPUs (after the P6, due in 1996) as VLIW chips using HP's VLIW technology. This is clearly a big risk for Intel; it also has possible huge rewards. So little real-world experimentation has been done with VLIW chips that it is impossible to say how well they will do running desktop PC software, or even how well they will do emulating the x86 software that is run today.

BY BECOMING PARTNERS WITH HP INSTEAD OF A RISC MANUFACTURER,

INTEL IS LIKELY TO CREATE ITS NEXT GENERATION OF CPUS (AFTER THE P6, DUE IN 1996) AS VLIW CHIPS USING HP'S VLIW TECHNOLOGY.

THIS IS CLEARLY A BIG RISK FOR INTEL; IT ALSO HAS POSSIBLE HUGE REWARDS.

VLIW chips are significantly different from RISC chips in many ways. The basic feature that sets RISC chips apart from currently popular CPUs is that they have a small number of equally sized instructions. This makes it much easier for the CPU to process its instructions and allows the CPU to execute many instructions at once. VLIW processors, on the other hand, expect many instructions that can be run in parallel to already be bunched together; the chips are optimized for this kind of operation. However, for VLIW to get much speed improvement, the instructions must

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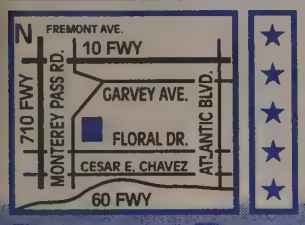

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be bunched correctly.

This bunching brings up the risks that HP and (presumably) Intel face: they must get good compilers for whatever chip they make. Of course, good compilers are needed for RISC chips, but RISC chips still run fairly quickly even with unoptimized instructions. In fact, Intel's Pentium continues to suffer from lower-than-expected speed ratings because not enough programs have been recompiled to take advantage of some of its features. VLIW is particularly compiler-sensitive; if the instructions aren't bunched well, the CPU is doing much less than it might. Today's PC software vendors buy their compilers from at least five different major compiler companies, so the Intel-HP alliance will have to work hard to make sure that there are many good compilers before their new CPU comes out.

An even larger risk, however, is that the VLIW technology that they choose doesn't match well with the way PC users work. Today, most people use graphical interfaces like Windows and the Macintosh; no one knows whether interactive graphical interfaces will run as quickly on VLIW chips as they do on today's RISC chips. By 1999, the entire networking market will have changed; again, it is unclear if the kind of networking that people are doing then will work better with VLIW or with RISC. On the other hand, if VLIW turns out to be a winner in these areas, Intel and HP may be the only players for many years until their competitors catch up.

Even if Intel doesn't choose VLIW, it must decide soon what its next step will be. Of course, whatever type of CPU Intel decides to build will run today's x86 software. However, it is not clear how. The new generation of hardware may be a dual-CPU that runs its own software in one part of the CPU and the x86 software in another. Intel may choose the route of the PowerPC and simply emulate x86 software in the new CPU, although this is unlikely. Another possibility is that the new CPU won't run x86 software at all, but the chips will be designed to run in parallel with a very cheap x86 CPU when needed.

Given how far off this next generation is, Intel should be at least a bit worried about what might happen between now and then. IBM is widely rumored to be making a PowerPC chip that will run x86 software on the CPU. Given IBM's licenses and its massive base of technology, this should not be all that difficult, although getting it perfect will take some time. At the same time, Apple is rumored to have a much, much faster x86 emulation package for its PowerPC Macintoshes that could be available by the end of this year (Apple's current product is incredibly slow and requires a huge amount of RAM). If these are in place and popular by the end of 1995, Intel will feel even more pressure to get its next major step right.

Clearly, the biggest part of any decision by Intel will be how to keep today's users the happiest over the next decade. Pentium prices are coming down, and the next generation (possibly the last generation) of the x86 chip, the P6, will be in place within two years. However, beyond that, Intel has no clear strategy. If its alliance with HP turns out a new type of CPU, the Intel marketing machine will certainly make sure the new CPU gets much more than its fair share of attention. If the CPU is even a moderate technical success, Intel will have it made for another ten years. If the new CPU is a dud, the PC market in 1999 could be very different than it is today.

Away From The Office: New Networking Strategies Emerging

Now that the portable computer is ubiquitous, many businesspeople feel freer to work at home or on the road. Telecommuting from home has become common in many industries, and corporate MIS departments have become very familiar with linking remote workers to the company network through banks of modems. Networking software for modem users has been optimized to take into account the relatively slow speed of modems.

Businesspeople on the road have a different set of worries that are just now being addressed. Unless you're sure that you will be at a phone from which you can dial to the corporate network, a modem and network software won't do you much good. Instead, many people are looking to wireless communications such as cellular modems. These solutions pretty much replicate the normal modem but do not require you to find a phone jack that you can use. Cellular companies are especially happy with these solutions because they increase the amount of high-priced phone traffic they carry.

Many business travelers do not need to be hooked into the corporate network, or only need to do so for a few minutes a day to exchange email. For these people, wireless technology is much too expensive and cumbersome. Instead, they are turning to new products that give them more flexibility but cost much less.

A recent example of such technology is the Pereos storage system from start-up manufacturer Datasonix in Boulder, Colorado. For $600, you get a player about the size of a Walkman that contains a 1GB tape cartridge. You can plug the player into any PC and use it as an adjunct to your current portable or desktop system. Additional cartridges, which are the size of a large postage stamp, are $30 for 1GB or $50 for 2 GB. Pereos should be available within the next few months.

If most of your access to the corporate network is for files, being able to load a gigabyte in your pocket could eliminate most of your network needs, aside from things that change day to day such as email. Before you go on the road, you load everything you might need onto the cartridge; with a gigabyte to spare, that "everything" can indeed be everything. Using software that comes with the system, you then access the files you need as you need them. When you dial in to get your email, you can update the files you need as well.

New software that aids business travelers is also becoming popular. Many packages help you keep the files on your desktop at the office the same as your portable, and others will even dial your modem after 11 pm and do the file exchange when the phone rates are low and the system network is probably less busy. This kind of software is not as vital for people who dial into the network all the time, but is a great boon for those who can't, or simply choose not to. ■

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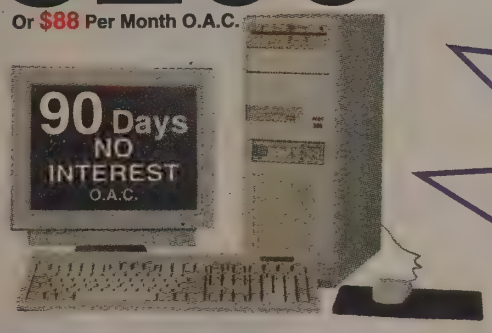

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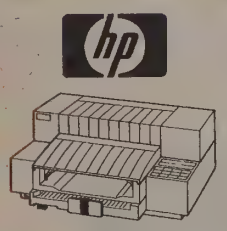

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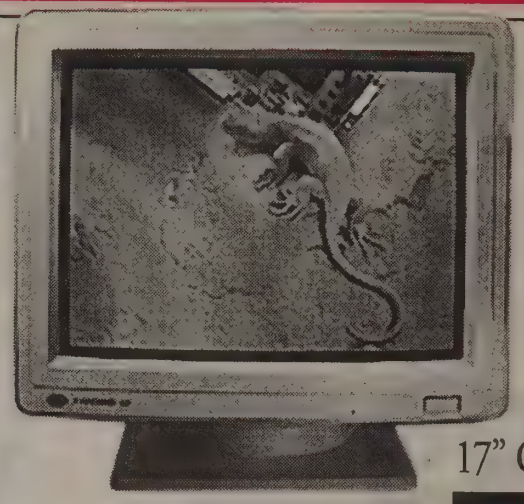
UNITEK™ storage solutions

E-MACHINES®

ColorPage™

- 17" Color Graphics Flat Square Monitor
- .26 mm Apeture Grille Pitch
- Maximum Resolution of 1024x768 (Non-Interlaced)
- Variable Horizontal scan frequency of 35 to 61KHz
- Vertical Scan frequency of 67/75KHz
- Mac Compatible



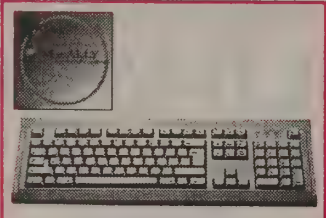
17" Color Display

NEW
One Year Warranty

UNITEK Special Sale Price
• Limited time/Qty
$589

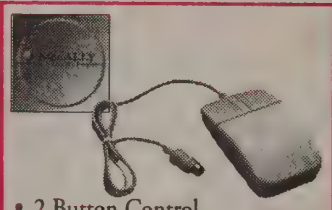
Macintosh Compatible Peripherals

UNITEK™ storage solutions



- Mechanical Key Switch Control
- 105 Key Ext. Keyboard

#MK-105 **$89**



- 2 Button Control
- Optical-Mechanical encoding
- Res: 290DPJ

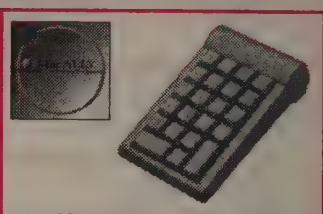
#MM-02 **$39**

- 3 Button Control
- Optical encoding
- Res: 300/600dpi
- Right & Left enter keys

#MO-03 **$59**

- Pen Mouse
- Optical Mechanical encoding
- Normal Res: 250 dpi
- Pen or thumball operating mode

#MP-01 **$57**



- 22 Key Numeric Keypad for Powerbook
- Low Power Consumption
- 3 Operating Mode

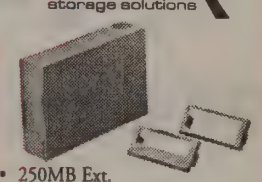
#MK22 **$59**

UNITEK™ storage solutions

- 170MB Ext. SCSI Hard Disk
- 3.5" Form Feeder
- Dim: 166MMx247MM x59MM
- 14 MSec.

#EDB-933-170 **$295**

UNITEK™ storage solutions



- 250MB Ext. SCSI Hard Disk
- 3.5" Form Factor
- 40W Power Supply
- 12MSec.

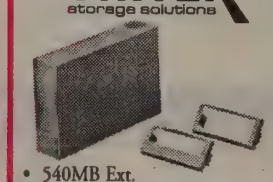
#EDB-933-250 **$349**

UNITEK™ storage solutions

- 340MB Ext. SCSI Hard Disk
- 3.5" Form Factor
- 40W Power Supply
- 12MSec

#EDB-933-340 **$395**

UNITEK™ storage solutions



- 540MB Ext. SCSI Hard Disk
- 3.5" Form Factor
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UNITEK™ storage solutions

- 1GB Ext. SCSI Hard Disk
- 3.5" Form Factor
- Dim: 166MM x 247 x 59MM

#EDB-933-1000 **$829**

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- 85MB Portable HDD For Powerbooks
- 2 1/2 Enclosures
- ADB Cable
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- Carrying Case

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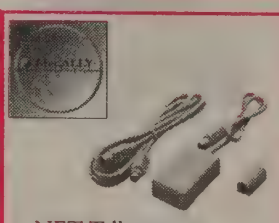
- Transce
- Star Topology
- RJ45 TIP
- 10 Megabits/Sec

#MM1100T **$62**



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- Apple Net and Mini Din 8P

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- 5.25" Form Factor
- SCSI, SCSI II Interface
- 40W Power Supply

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- Digital Camera for Macintosh and Windows

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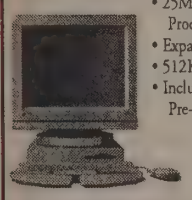
W/Application Software



- 25MHz 68LC040 Processor
- Expandable to 36MB of RAM
- 512K of on-board VRAM
- Includes 7 Softwares Pre-Loaded

4/160
$829*

*w/purchase of Unitek Ext. K.B. $149, and any Monitor

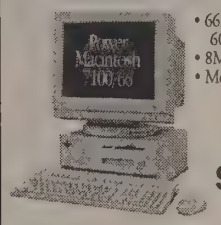
Apple® Power Macintosh™ 6100/60

- 60MHz Power PC 601 Processor
- 8MB RAM, Exp. to 72MB
- Monitor/K.B. not included

8/160
$1519*

*w/Purchase Unitek Ext. KB $149, and Any Monitor

Apple® Power Macintosh™ 7100/66

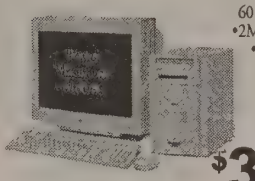


- 66MHz Power PC 601 Processor
- 8MB RAM, 32K Cache
- Monitor/K.B not included

8/250
$2569*

*w/Purchase of any Monitor

Apple® Power Macintosh™ 8100/80



- 80MHz Power PC 601 Processor
- 2MB of VRAM
- Monitor & K.B. not included

8/250
$3626*

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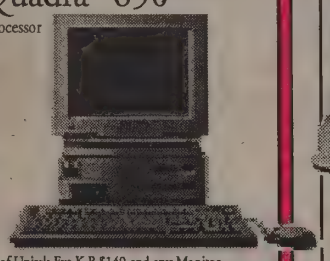
Apple Macintosh Quadra® 650

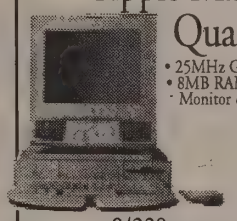


- 33MHz 68040 Processor w/built-in Math Co-processor
- Keyboard and Monitor not included

8/230
$1809*

*w/Purchase of Unitek Ext.K.B.$149 and any Monitor

Apple Macintosh Quadra® 660AV



- 25MHz G68040 25/55MHz DSP
- 8MB RAM, Expandable to 68MB
- Monitor & K.B. not included

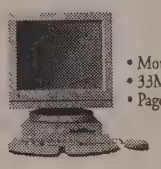
SPECIAL BUY

8/230
$1379*

8/230/CD
$1629*

* w/Purchase of any Monitor

Apple Macintosh Quadra® 800

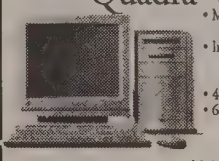


- Motorola 68040, 33MHZ
- 33MHz Floating Point Unit
- Paged Mem Mgmt, 8K Cache
- K.B & Monitor Not Included

8/230 New
$2219

8/500 New
$2359

Apple Macintosh Quadra® 840AV



- Most powerful, feature-rich system Apple has ever built.
- Innovative architecture that delivers new capabilities in telecommunications, video and speech
- 40MHz 68040 processor
- 66MHz digital signal processor

Keyboard and Monitor not included.

8/230
$2285*

* w/Purchase of Unitek Ext. K.B. $149

Apple Macintosh PowerBook® 145B

- Solid Macintosh Performance and Flexibility Built In!
- Ergonomic Design!
- Original Hard Disk

4/80
$1189

Apple Macintosh PowerBook® 165

- Color Video Output
- 33MHz 68030 Microprocessor
- Original Hard Disk

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$1365

Apple Macintosh PowerBook® 180

- Gray Scale Active Matrix Display!
- Color Video Output!
- High Performance & incredible speed

Special Buy - NEW
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$1849

Apple Macintosh PowerBook® 520/520C

- Motorola 68LC040 50/25MHz
- Upgradeable to Power PC
- Built-In Ethernet

520 4/160 **$2059**
520C 4/160 **$2629**

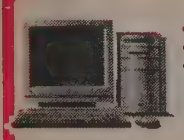
Apple Macintosh PowerBook® 540/540C

- Motorola 68LC040 66/33 MHz
- Upgradeable to PowerPC
- Expandable to 36MB

540 4/240 **$2839**
540C 4/320 **$BEST PRICE**

SPECIAL BUY

Apple® Macintosh® Quadra® 950



- 33MHz, 68040 Microprocessor
- Ten Built-In Ports
- Five Nubus Expansion
- K.B. & Monitor not included Special Price

16/1000 HDD
$3765

Apple Workgroup™ Server 6150

- 60 MHz Power PC 601 RISC
- Apple RAID Software
- AppleShare 4.02 Preinstalled

8/500/CD
$3785

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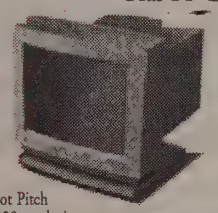
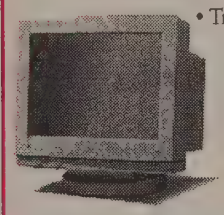
Apple Macintosh® Color Plus 14" Display



- .28 Dot Pitch
- 640x480 resolution

$299

Apple® Multiple Scan™ 17" Display

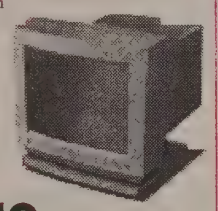


- Trinitron Screen
- Digital Control
- 17" Screen

$949

NEW

Apple® Multiple Scan™ 20" Display

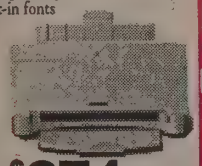


- Trinitron Screen
- Digital Control
- 20" Screen

$1949

LOWER PRICES

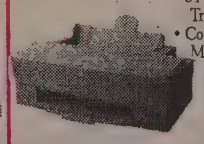
Apple® StyleWriter®II



- 360 dots-per-inch quality
- Grayscale printing & 35 built-in fonts

$274

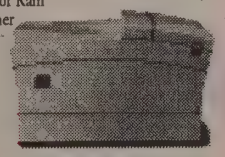
Apple® Color Stylewriter® Pro



- 360DPI Resolution
- 64 Scalable Truetype Fonts
- Color Sync color Matching Tech

$579

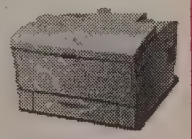
Apple LaserWriter Personal™ 320



- 300DPI
- 4 Pages Per minute
- 2MB of Ram
- w/Toner

$859

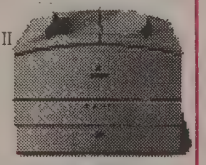
New Apple LaserWriter Select™ 360



- 600 Dot per inch
- 10 Pages Per minute
- 7MB Ram
- Adobe Postscript 2
- w/Toner

$1399

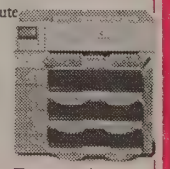
Apple LaserWriter® Pro 630



- 600 DPI
- 8 Pages per minute
- 8MB Ram
- Adobe Postscript II
- w/Toner

$1899

Apple LaserWriter® Pro 810



- 300, 400 (default) 600 or 800 DPI
- 20 Pages Per Minute
- 8MB Ram
- 64 Scalable Fonts

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Apple CD™ 300

300I Int.	$219
300 Ext.	$349
300I plus Int.	$279
Multimedia F/MAC	$439

PLI

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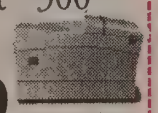
Apple Newton 110 MessagePad™

- Include Stylus 2
- Batteries Included

$569

Apple Laserwriter Select™ 300



- 300DPI
- 5PPM
- 512K

$629

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FREE
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FREE
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(No Purchase Necessary)

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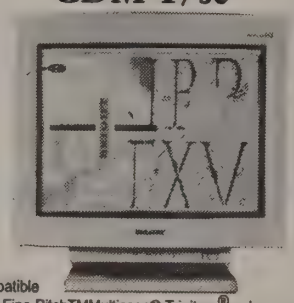
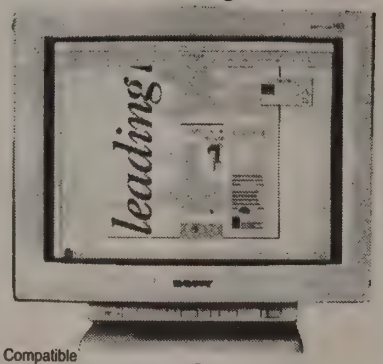
GDM-17se



- Mac Compatible
- 17" Super Fine PitchTMMultiscan® Trinitron® color graphic display
- Unique ASIC design automatically adjusts image geometry parameters across a continuous range of scan frequencies
- Energy Star and VESA-DPMS compliant
- .25 mm Aperture Grille pitch
- Maximum resolution of 1280 x 1024 at 77 Hz refresh
- Horizontal scan range of 31.5 to 82 kHz
- Easy-to-use digital control of screen images
- Includes color temperature control for publishing, photography, imaging, and design applications
- Swedish MPR II compliant

$975

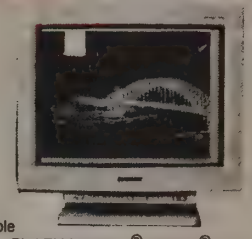
GDM-2036S



- Mac Compatible
- 20" Super Fine PitchTM Multiscan® Trinitron® color graphics display monitor
- .30mm Aperture Grille pitch
- Maximum resolution of 1280 x 1024 refresh (non-interlaced)
- Variable scan frequency of 30 to 71 kHz
- MRP II

$1819

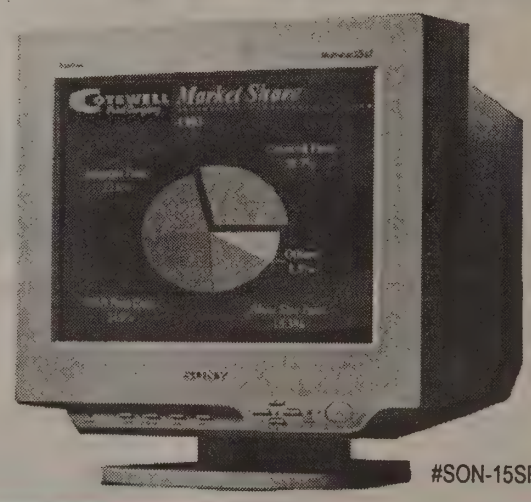
NEW! GDM 20se



- Mac Compatible
- 20" Super Fine PitchTM Multiscan® Trinitron® color graphics display monitor
- .30 mm Aperture Grille pitch
- Maximum resolution of 1280 x 1024 at 80 Hz refresh (non-interlaced)
- Variable scan frequency of 28 to 85 kHz
- Overscanning for crisp edge-to-edge images
- Sony Display Memory System provides easy-to-use digital control of screen images
- Includes color temperature control for publishing, photo and design applications
- Full compliance with Swedish MPR II standards for VLF/ELF magnetic and electrical emissions

$1849

NEW! Multiscan® 15sf 15" Trinitron®



- 15" Digital Multiscan® computer display with 14.0 maximum diagonal viewable area
- Trinitron® technology delivers bright images and vibrant colors
- .25mm Aperture Grille pitch
- EPA Energy Star and MPR II compliant
- Supports PC and Macintosh resolutions from VGA to 1280 x 1024 at 60Hz
- New design feature simple control buttons and minimizes footprint
- Includes color temperature control

$489

#SON-15SF

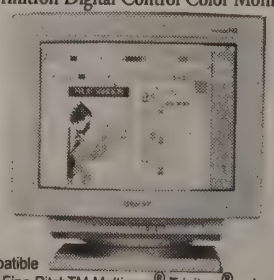
Sony CPD-1320

- MAC Compatible
- 14" Super Fine Pitch™ Trinitron® Multiscan™ monitor
- .25mm Aperture Grille pitch
- Resolution of 640 x 480 (VGA)
- Scan frequency of 31.5 kHz
- Includes VGA cable and tilt/swivel stand

$359

Sony CPD-1730

Trinitron Digital Control Color Monitor



- Mac Compatible
- 17" Super Fine PitchTM Multiscan® Trinitron® color display
- .25mm Aperture Grille pitch
- Maximum resolution of 1024 x 768 at 72 Hz refresh (non-interlaced)
- Variable scan frequency of 28 to 58kHz
- Overscanning for crisp edge-to-edge images
- Sony Display Memory System provides easy-to-use digital control of screen images
- Full compliance with Swedish MPR II standards for VLF/ELF magnetic and electrical emissions

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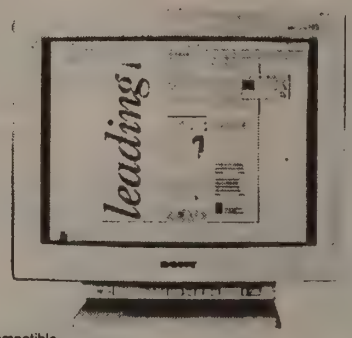

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REALIZABLE FANTASIES • BY JIM WARREN

About Hotels, Correctness, Speech & Stuff

Prior to the last year's preoccupation with pushing computer-assisted government-access through the legislature, this column focused on viable technology fantasies—things that haven't been done, but could be. Now!—and now, again...

Hostel Ideas

When making hotel reservations, make sure that they are "TC"—technologically correct: Do their rooms have RJ-11 phone jacks for your laptop's modem cord? Do they have fax send and receive options? Do they *not* charge for 800-number calls? Applaud TCness—or complain about its absence—on their service-quality response cards.

And data-modems, fax-modems, and datacomm software need to facilitate often-changed out-dialing prefixes and user's-location area codes. They also need to allow for a calling-card number, plus the number being called, plus options for long pauses between each. Ideas brainstormed with Jay Thorwaldson at BBScon.

And why don't all datacomm programs include the option of an immediate-dial fax or data number? Most appear to require that the fax or data number first be entered in a fax directory or datacomm directory, and will *then* allow you to use it the one time before you delete it from the list. *Blegh!*

A hot idea: If a hotel's fire alarm goes off, it'd be helpful for all TV channels on each television set on each floor to switch to displaying (a) the escape route for that floor, ideally including a "You are here" marker for the television set, and—if available—include text information describing the fire or a floor plan indicating the fire site and its extent. Handy for everyone; especially valuable for the hearing-impaired. This idea from Woodside's Nancy Christian.

Authenticating The Right Stuff

How can you tell whether a program or text file has been changed without your knowledge? Maybe it's just a single flaky hardware-bit that inverts—in the most significant digit of your tax return. Surely the IRS auditor will understand.

Or maybe it's expensive commercial software that you bought from some sleazy company that sneaks updated versions into their retail distribution without notice and without changing release numbers—so you can't tell whether you have a bad "current release" or a good "current release." The practice is much-too-politely called "slipstreaming," illustrated by some WordPerfect releases. Lotus and Microsoft have left release numbers unchanged but appended an ambiguous alpha-character to their modified modules. Caveat Emptor!

If you can't trust the release number nor the size nor the creation-date, then how can you check the "purity of essence" of a file?

Some elderly operating systems of Long Ago had a "directory" command option that would display a file's checksum or hash-code computed on the current contents of the file. Some checksums were trivially untrustworthy. Well-designed hash-codes were much more reliable, but still subject to at-least-theoretical error.

If unkind comments are keyboarded, but never published on paper, are they speech or writing?

Most folks conduct online discussions like spoken dialogue.

Slibel & Lander

What's it called when someone—speaking in an electronic conference—posts a remark that falsely maligns a person? "Sliber?" "Landel?" (Memory aid: Slander is spoken; libel is "literary," uh, written.)

If unkind comments are keyboarded, but never published on paper, are they speech or writing? Most folks conduct online discussions like spoken dialogue.

But it could be published.

But it usually isn't even printed, much less published.

But public postings are often circulated analogous to newspaper publication.

Ahh, evermore labors for litigators.

Could online publishing possibly impact the laws of libel? Such laws certainly restrict freedom of the press, and the twentieth-century US press is *much* more polite and balanced than in the nation's first century.

That two hundred-year-old parchment says, "Congress shall make no law... abridging the freedom of speech, or of the press; of the right of the people peaceably to assemble, and to petition the government for a redress of grievances."

Perhaps the statutory restriction on the Constitutional freedom of the press regarding libel came about at least in part because publishers had much greater ability to distribute their allegations than possibly libeled parties had for rebuttal. But, online, an individual has just about as much ability to refute allegation as an online publisher has to make them.

(Based on a comment and article by the Electronic Frontier Foundation's Mike Godwin [mnemonic@well.com].)

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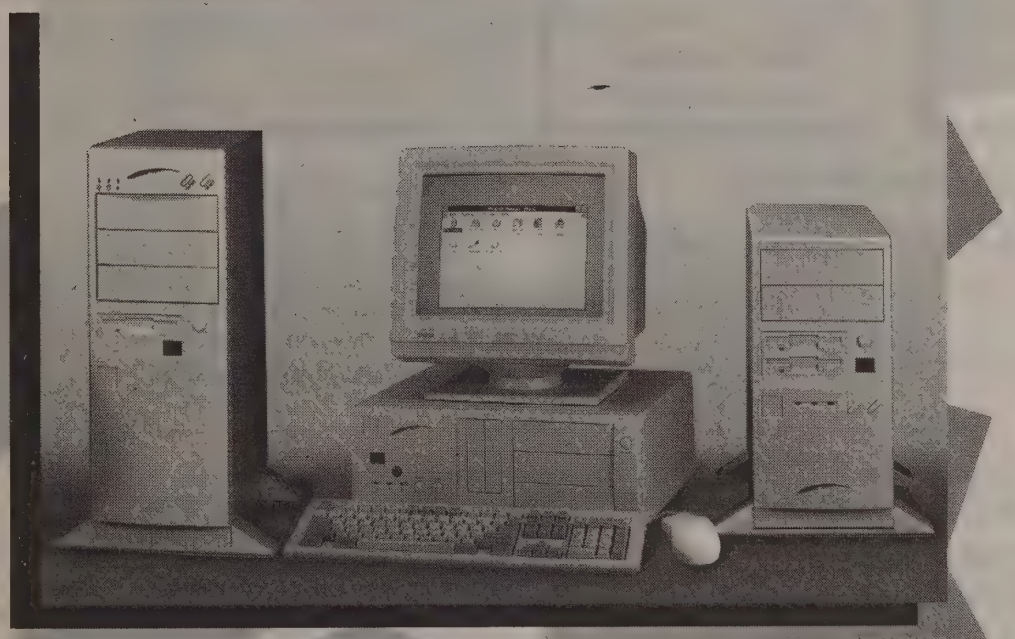

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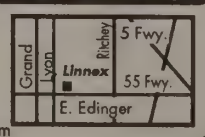

Fantasies *continued*

companies provide left-handed computer devices for the "handedness-challenged?" And, is there any truth to the rumor that poor folks must now be called "economically challenged," and short people, "vertically challenged"? These things have been gettin' outa hand ever since school janitors became Custodial Engineers (but without wage increases).

• Ask not what your country can do for you. Ask, instead, what your country should *stop* doing "for" you. Like forcing foreign manufacturers to charge US consumers higher prices than they offer in other nations. Like trade barriers that imply American business and workers are incompetent to compete in a world market. Like prohibiting economical import of active-matrix displays—which prompted Apple and others to move laptop-computer manufacturing offshore in order to offer state-of-the-art displays, or else limit themselves to offering noncompetitive products.

And like pouring half the national deficit, uh, budget into the defense pork-barrel and excusing it by publicizing the occasional consumer-product benefits. If the government wants to fund nondefense—or non-space—technological development, then do it directly; not as incidental fall-out, like Corning Ware and Tang.

• Back to the drawing boards: You know those fancy, low-wattage fluorescent light bulbs that cost $25 or $30 or more, apiece? Like Matsushita/Panasonic's EFT18LE-T—an 18-watt screw-in that replaces a 75-watt incandescent? Well, in a fit of political correctness, I bought a batch. Two-thirds of 'em died within a month—in the first brown-out. The design must have violated a fundamental rule of engineering: Assume adversity!

• Shouldn't "gigabyte" simply be called "bigabyte"—or maybe, "overbyte?" Should Intel microprocessors' infuriating 640K limit be called "lillibyte"—after *Gulliver's Travels'* Lilliputians? And when political candidates give online responses to voter questions over the computer networks, are those "sound-bytes?" These questionable contributions are blamed on Kings Mountain's Jay Thorwaldson. ■

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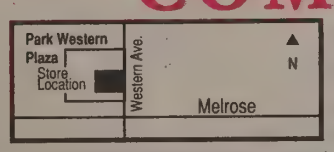

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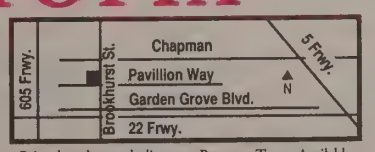

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BY JOHN PERRY BARLOW

To Be At Liberty

(From the documentary "Declarations," currently being broadcast on PBS; check with your local affiliate for broadcast schedule)

Let me tell you where I'm coming from. I grew up on a ranch near Pinedale, Wyoming, a very free town not far from the middle of nowhere.

It was the kind of place where a state legislator could actually say, "If the English language was good enough for our Lord Jesus Christ, it's good enough for our school children."

Though surely a hick town, it was also a real community. There was a lot of trust. Neither the locks nor the lawyers got used much. People knew each other and tried to let one another be. After all, they'd come to that wild and remote place to be free. Liberty was a fierce practice among them. That it might also be a legal guarantee seemed irrelevant.

It seems to me that elsewhere in America, liberty is far more a matter of law than practice. The Bill of Rights is still on the books, and they'd have a hell of a time putting you in jail for just saying something, but how free are we?

Whatever the guarantees, I believe liberty resides in its exercise. Liberty is really about the ability to feel free and behave accordingly. You are only as free as you act.

Free people must be willing to speak up...and listen. They can't merely consume the fruits of freedom, they have to produce them.

This exercise of liberty requires that people trust one another and the institutions they make together. They have to feel at home in their society.

Well, Americans don't appear to trust each other much these days. Why else would we employ three times more lawyers per capita than we did in 1970?

Why else would our universities be so determined to impose tolerance that they'll expel you for saying what you think and never notice the irony? Why else would we teach our kids to fear all strangers? Why else have we become so afraid to look one another in the eye?

We have come to regard trust as foolishness and fear as necessary. We live in terror that the people around us might figure out what we're actually thinking.

Frankly, this America doesn't feel very free to me at all. What has happened to our liberty?

I think much of the answer lies in the critical difference between information and experience.

These days we view most of our world through a television screen. Most of our knowledge comes from information about things, not experience with them.

Let me return to Pinedale for an example. Those folks killed each other pretty regularly, but there wasn't much fear. They knew each other, and if somebody got shot, it wasn't too hard to figure out why.

Homicide was not abstract. It was a familiar threat, like wild horses or winter.

And you also knew that today's opponent might be the only person along to pull you out of a snowdrift tomorrow. So tolerance and trust were practical necessities. Living more or less safely in a world we understood, we found liberty an easy thing to keep.

But elsewhere, as I say, the average American's sense of the world has likely been derived by staring at it through the one-way tunnel of information.

What the media's taught my fellow citizens is that all the world is dangerous in some irrational, non-specific way. Terrorists are everywhere. Nature is in open rebellion. Making love can kill you. Your fellow humans are liars in suits, thugs, zealots, psychopaths, and, mostly, victims who look a lot like you.

Free people must be willing to speak up...and listen. They can't merely consume the fruits of freedom, they have to produce them.

Television amplifies the world's mayhem and gives you no way to talk back. No way to ask, "Is this the way the world is?" Just as right now it's giving you no way to argue with me.

Why does television prefer terrifying images? Because it lives on your attention. That's what television is really selling. And scaring the hell out of you is, like sex, one of those really efficient ways to get your undivided focus. To gain it, they flood your living room with images designed to hit your fear glands like electricity. So we have erected a glowing altar in the center of our lives that feeds on our terror, and Fear has become our national religion.

We ask the government to defend us against the virtual goblins that stream from the tube, and the government has obliged us.

For example, in 1992, a total of two Americans died in terrorist attacks. Not what I'd call a major threat. But our fear of them is so real that we spend tens of billions a year to protect ourselves from terrorism. For many Americans, making the car payments depends on keeping this fear alive.

But you cannot build a society of general trust in an atmosphere of general fear. The fearful are never free.

If we are to fight back—if we are to regain the courage necessary to the practice of liberty—we are going to have to stage another kind of revolution. We need to find a new means of understanding the world that takes no profit from our fear.

We need a medium that, like life itself, allows us to probe it for the truth. We need, in essence, to cut out the middlemen and speak directly to one another. Indeed, we need a place where we can share informa-

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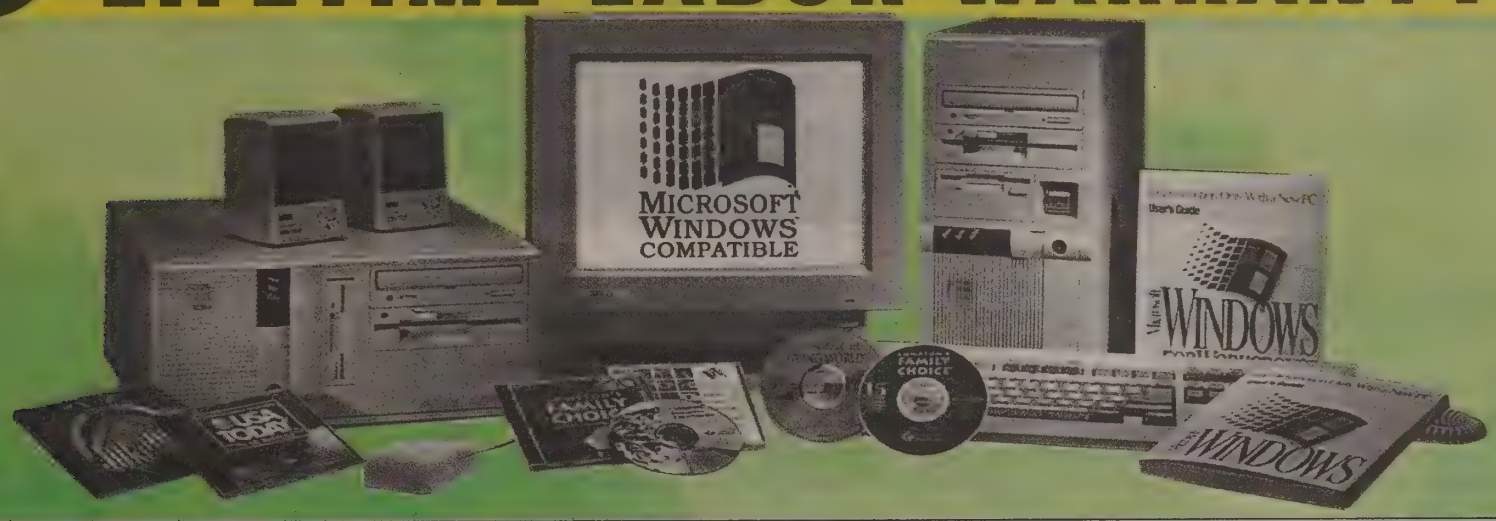

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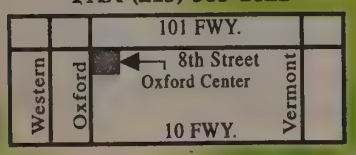

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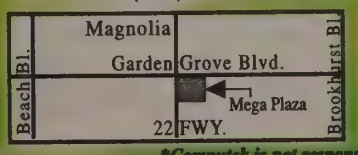

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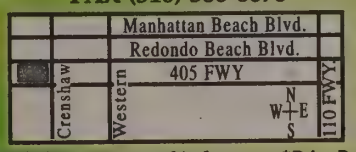

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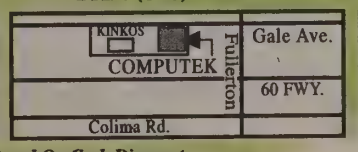

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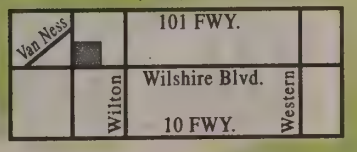

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To Be At Liberty *continued*

tion unfiltered by the needs and desires of either Big Brother or the Marketing Department down at Channel Six.

Such a medium may be spreading across the planet in a thickening web of connected computers called the "Internet." Through the Internet I can already get a personal connection with people all over the globe, learning from those on the scene what's really going on. Through the Internet I can publish my own understandings to whomever might be interested, in whatever numbers.

During the War in the Persian Gulf, I was able to get minute by minute reports from the laptop computers of soldiers in the field. The picture they presented felt far more detailed, more troubling and ambiguous, than the mass hallucination presented on CNN.

The Internet is also creating a new place...many call it Cyberspace...where new communities like Pinedale can form. The big difference will be that these Cyberspace communities will be possible among people whose bodies are located in many different places in the world.

Direct communication should breed understanding and tolerance. Our fears will be far easier to check out. We may begin to understand that these distant and sometimes alien creatures are real people whose rights are directly connected to our own.

I imagine the gathering places of Cyberspace, some as intimate as reading Pinedale's Wrangler Cafe, some more vast than Tienanmen Square. I imagine us meeting there in conditions of trust and liberty that no government will be able to deny.

I imagine a world, quite soon to come, in which ideas can spread like fire, as Jefferson said, "expansible over all space, without lessening their density at any point, and like the air in which we breathe...incapable of confinement or exclusive appropriation by anyone."

If ideas can spread like fire, then freedom, like water, will flow around or over those that stand in its way. In Cyberspace, I hope that this truth will be self-evident. ■

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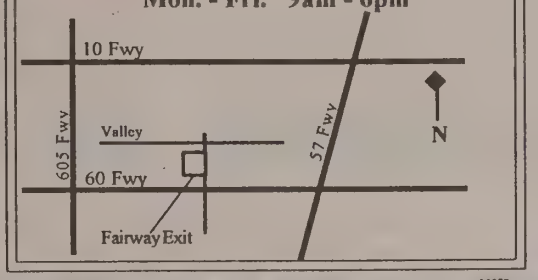

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Thoughts On General Magic

Plus: WinPDA, New Newtons, And More

So far, General

Magic's technology has been very well received in the personal digital assistant world. Several manufacturers, including Motorola (with its Envoy personal wireless communicator), Matsushita (known among other things for its best-known brand name, Panasonic), Philips, and Sony, are building PDAs which utilize the software.

The company has two products, Magic Cap and Telescript. (See "From Mac to (General) Magic," Issue #120) Magic Cap refers to an operating system and user interface, and Telescript refers to a kind of agent-based network communications standard.

MagicCap Is A User Interface

MagicCap PDAs will share a common user interface.

From a graphic design point of view, the layout of the interface seems to me a bit awkward; the icons are oddly shaped, and they don't seem to be placed very elegantly on the screen. The attempt is to create a "virtual space" in which the icons are objects in that space, which is a good thing, but it is rendered with somewhat primitive-looking graphics which don't really seem to work very well, visually speaking, in that space.

Nevertheless, the basic notion of creating a user-friendly interface by using everyday metaphors is good, and there is no doubt that many people could pick up a MagicCap-based PDA and, without much effort, be able to use it.

The screen starts out with a view of a desk (presumably "your" desk), with a telephone, Rolodex, postcard, notepad, and some sort of difficult-to-identify thing which I presume is a calendar, all lying on top of the desk. On the back wall is an "in" and an "out" folder, a clock, a filing cabinet, and in the desk itself is an "envelope drawer" and a "calculator drawer." In addition to this there's a set of rather cryptic-looking icons which run along the bottom of the screen, some of which are self-explanatory, and some of which are hard to identify. Basically, the layout seems usable, if not very visually appealing, and not quite as self-evident as the designers might want it to be.

Instead of a menu system, Magic Cap provides a "virtual hallway" which you can walk down to access various services, and which can be extended indefinitely. "Outside" are other "buildings" in the "town," through which you access various services (such as America Online). Until Magic Cap hardware ships, it's difficult to evaluate how well this works.

Extensive "power user tools" are mentioned, which allow advanced users to create their own interface appearance and structure. This could well make it easier to work around apparent deficiencies in the standard interface.

MagicCap does not support handwriting recognition at this time; like the Sharp Wizard 9000-series PDAs, the MagicCap platform uses the pen primarily for entering diagrams and navigating through the user interface. Unlike the Wizard, however, MagicCap-based PDAs are not designed to have keyboards; the Envoy, for example, does not. To enter text, you use an on-screen keyboard, tapping out the letters with either your fingers (using the touch-sensitive screen), or using a stylus.

Agents Do Your Work For You

Telescript, the other major product from General Magic, is designed as a standard for personal network communications. Telescript is a programming language, much like PostScript for printers, which allows you to send what are called agents across the network to do various tasks for you. Rather than simply accessing various online services, you create an agent to go across the network for you, getting you the theater tickets you want, making your dinner reservations, and getting the cheapest deals on air travel.

I'd love to have the option of using agents when I have a well-defined task for them to do, but I'm not sure I want that to be my only option.

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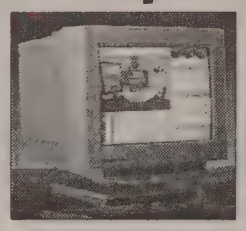

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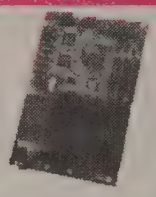

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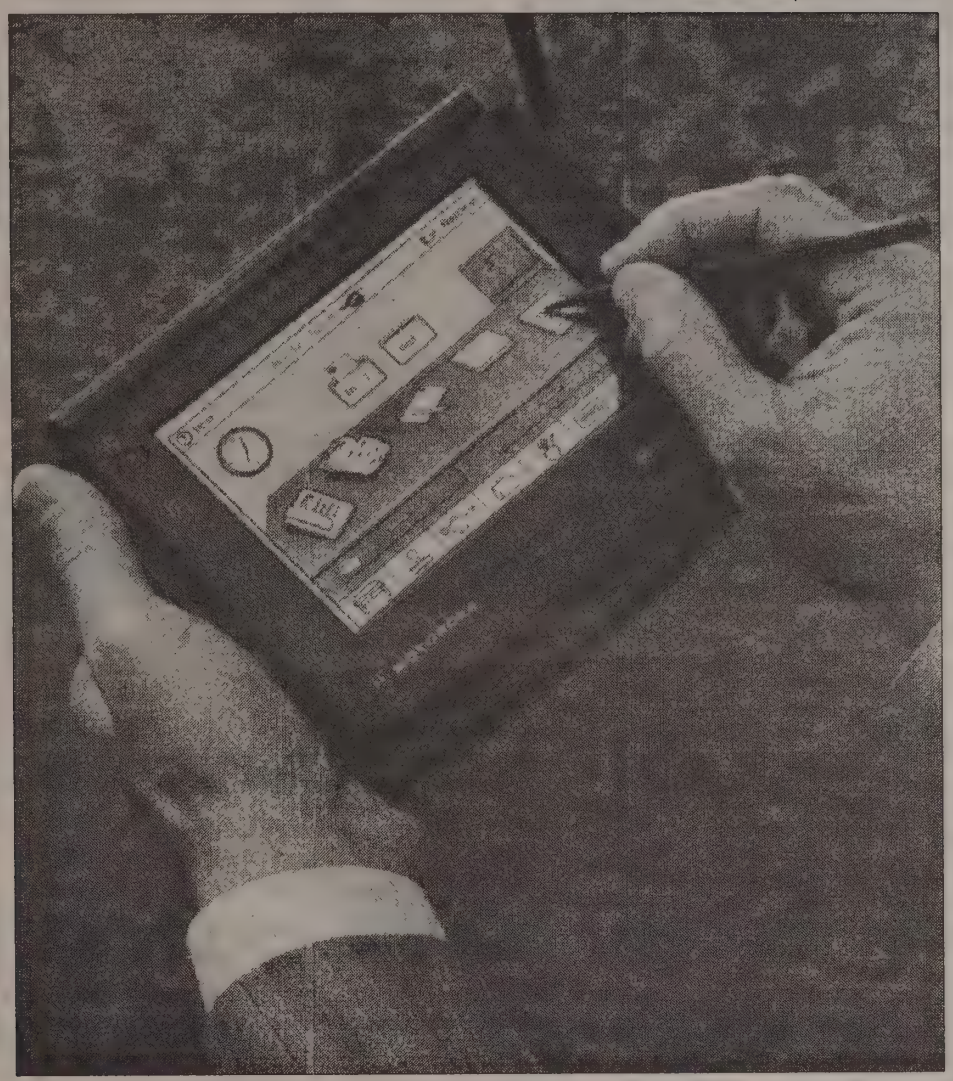

The theory is that since the agent is doing the negotiations for you, you don't have to stay online for very long (saving you a lot of expensive network charges). You just send the agent off and let it find what you need; later, you can come back and check what it's done.

Sounds great in theory, though it raises a variety of questions about whether this is what you'd really want in practice.

The potential of this technology is quite awesome. Sending platform-independent programs across the Net instead of just dumb data allows far greater flexibility than current designs. My feeling is that this power will be used in ways not yet envisaged by the current designers of the technology, because of its natural extensibility and flexibility.

However, a problem I have with the idea of delegating all my work to agents is that it takes me, the user, out of the loop. I can create them (or rather, the applications I'm using can create the agents for me), and send them off, but once they're gone, then I have no more say in the matter. The implication is that if I tried to interactively use these services in real time, I would end up spending huge sums of money paying for packet transmission charges while I search the Net myself.

Sure, I'd love to have the option of using agents when I have a well-defined task for them to do, but I'm not sure I want that to be my only option. Agents can't explore for me if I don't know what I want already—they will only work if I have a clear idea of what it is I want in advance. What if I want to read the menus of the restaurants before I book a reservation? What if I don't know what plays are in town, or what particular stereo system I want to buy? Sure, I can always try to program better and better agents, but there is always a limit to how smart the agents can be. There is a point of diminishing returns.

It seems to me that agents are a great option, but I'd like to also have the (inexpensive) option of exploring the Net on my own, directly, interactively. That means I need to be able to get answers in human-readable form, quickly and cheaply, using the bandwidth of the networks I'm connected to.

I have a sinking feeling that the whole design of Telescript is intended to deal with the fact that this bandwidth might be rather expensive; so, instead, I'm supposed to be glad that I can send off a little computer program to do the work for me, lessening the overall cost of information transfer.

That would be fine if I could make a little clone of my human awareness and send it off; unfortunately, all I can do is hope that I've created an agent which will do what I really want it to do. That's a lot like the "batch processing" of the bad old mainframe days, when you didn't have instant interactive responses to your queries, but instead submitted the computation to the mainframe in a "batch," and got the results back much later.

I'm not sure I'd want to completely sacrifice interactivity for that "privilege." The best of both worlds is what the users should have available to them: agents for the times they want the work done offline, and direct interactivity when they want to search for themselves.

WinPDA

The WinPDA architecture is an attempt by industry leaders to create an alternative PDA hardware standard based on Microsoft's Windows operating system. The WinPDA architecture is, however, both hardware- and software-based.

The hardware includes the VLSI Technologies Polar chipset, which combines many PDA functions, including hardware-based pen input tracking, and the AMD 386SC low-power processor. The availability of this chipset would allow clone manufacturers, in theory, to build low-cost standard pen-based PDAs. Rumor has it that machines based on this platform will not be available until next year; watch this space for more developments as they progress.

Apple Upgrades The Newton

The new Apple Newtons (the MessagePad 110) have a variety of enhancements to their ROMs which improve their user interface. Owners of older Newtons can upgrade their machines to the new operating system, v1.3, for $99.

The enhancements include deferred handwriting recognition (being able to take notes in electronic ink so you can recognize the handwriting at a later time, when it is more convenient), and letter-by-letter recognition, allowing you to turn off whole-word recognition and recognize the handwriting one letter at a time.

Both of these features should improve the usability of the Newton. Deferred recognition is particularly useful when you're trying to take notes quickly, and

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don't want to deal with the recognizer. Letter-by-letter recognition would be handy when writing down proper names and addresses unlikely to be recognized easily by the whole-word recognition techniques (unless the proper name was in your dictionary already).

CompuServe's Magic Genie

Despite the confusing name, Magic Genie is software which runs on the Motorola Envoy (as mentioned above, a Magic Cap-based personal communicator) to access CompuServe Information Services (rather than, as you might expect, Genie, a well-known competing information service).

The software uses Telescript to gather information from various information services on CompuServe. For example, you can use the agent to request stock information updates, weather forecasts, news, and email. The software, developed by River Run Software Group, was designed to be extensible, allowing new add-ons to give access to additional CompuServe services.

Drawing Package For The Motorola Envoy

Driftwood Systems has announced a drawing package for the Motorola Envoy which allows the user to input a drawing in messy electronic ink and have it automatically "cleaned up." The system uses a fuzzy

New features should improve the usability of the Newton.

logic engine to recognize shapes, and the application is integrated with other applications in the system, allowing you to use it easily to supplement a text with drawings.

In addition, since the shapes are stored in a more compact format than electronic ink, this can reduce the size and therefore cost of messages sent across wireless networks. ■

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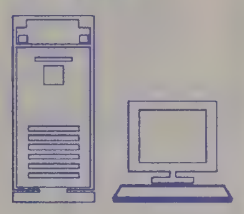

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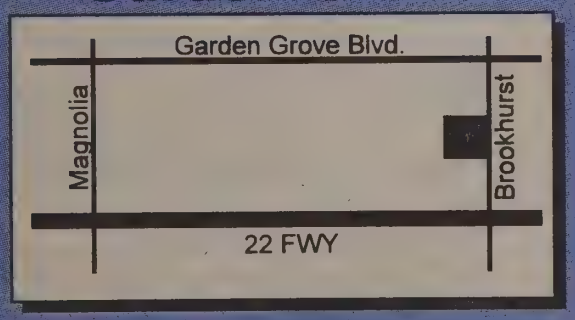

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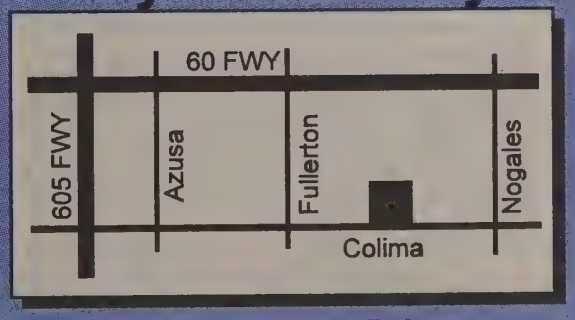

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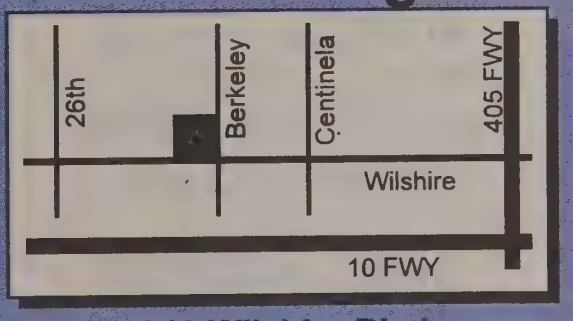

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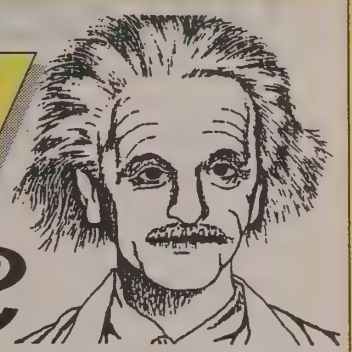

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A Portable Full-Page Scanner

With The Emergence Of Great Fax Software And Fax Modems, A Portable Scanner Was The Inevitable Next Step In The Evolution Of Portable Computing

Until recently, I have had to warn readers that fax software was great as long as you did not expect it to take the place of a standalone fax machine. While there are definite advantages to fax software over a dedicated fax machine, there is one great drawback: you simply cannot receive a form, fill it out, and fax it back. I know, it is technically possible, but it takes away from the point and convenience of working with faxes. All too often, I have no easy option except snail mail for returning the completed form that was faxed to me.

Helping to provide a solution, Logitech has introduced its new ScanMan PowerPage portable scanner. I have been working with it the past few days and am delighted. But I must confess that I have been using it on my desktop system, which has two parallel ports and significantly more memory than my portable computer. To get the most out of the ScanMan PowerPage, you need to have at least 8MB of RAM; you can get by with 4MB, but will need an 8MB swap file in Windows. This means that you must have an extra 8MB of free space on your hard drive.

The scanner itself measures less than a foot long by less than 3" x 3", making it small enough to fit inside your briefcase. It comes with a cable that attaches to the parallel port of your computer. A power supply plugs into a wall outlet and then into a port on the cable. You can also run the scanner from a rechargeable battery pack ($79).

Installation of the necessary software to make it all work is simple. You plug the cable from the scanner into the parallel port on your computer and turn on the power. Next, you install the software, which works from within Windows. This also is simple, as you are guided through the installation and there are few choices you need to make. If you choose to have the PowerPage Control Center installed into your startup sequence, the features of the scanner are available to you from within any application.

In addition to its convenience for sending faxes that did not originate from one of your applications, there are many other features that make ScanMan PowerPage a useful peripheral for any computer, portable or not. You can easily scan documents—sheets of paper or material contained within books—into other applications, such as a word processor. For instance, I was able to insert several pages of printed text into an existing AmiPro document. It was simple, but that was also when I ran into memory problems and discovered that even though I have 8MB of RAM, I needed a swap file if I was going to scan in whole pages of text. Partial pages worked great, but whole pages simply needed the full 8MB.

A final bonus of ScanMan PowerPage is its ability to function as a copy machine.

Scanning in a document is easy. You simply open your word processor, place the cursor where you want the new text to begin, and call up the scanning software. Next, insert the page into the scanner and click the text button on the screen. The rest is automatic! Graphics can be brought in just as easily, if your underlying software is TWAIN compatible. If you plan to scan in text from a book, slip the top part of the scanner off of its base and place it on the text you want to scan. The wheels in the scanner move it along at the correct rate. All you need to do is make sure the scanner stays straight. In many ways, this scanner offers as much as larger flatbed scanners and certainly runs circles around handheld models.

While I like the idea of scanning from books, magazines, and newspapers into my word processor and being able to manipulate the text, I cannot report great success in this area. Optical character recognition (OCR) software is still relatively unsophisticated. Oddly, however, when I scanned in pages that had been generated by my computer the success rate was nearly 100%. While this software isn't ideal yet, it is a real time saver when it works.

An added bonus of ScanMan PowerPage is its ability to function as a copy machine. Again, call up the software, insert the material to be copied, click the copy button, and a wonderfully clear image comes out from your printer. With my laser printer, copies are as clear as originals. You can copy, scan, or fax up to ten pages with the optional cut sheet feeder ($129).

The ScanMan PowerPage comes with FotoTouch Color software, giving you the ability to manipulate and doctor images that you scan. This is similar to other graphics software, but works perfectly with the images scanned by Logitech products. You can enlarge, reduce, crop, edit, highlight, color, and more with this software. Because of software like this the courts have stopped allowing photographs to be used as evidence. It is simply too easy to alter photos. Unlike some of the larger scanners, however, this unit only scans in black and white (and numerous gray shades). If you need to process color images, this is not the unit for you.

Faxing a document from this scanner is as easy as copying. The only difference is that you click the fax rather than the copy button. The fax software automatically opens, letting you add a cover sheet generated by the computer. The file will also be saved in the computer for later transmission or for archival purposes. Logitech's ScanMan PowerPage is just what I have wanted. Logirtech also includes Win Fax Lite, a stripped down version of Delrina's WinFax Pro, in case you do not already have fax software. ■

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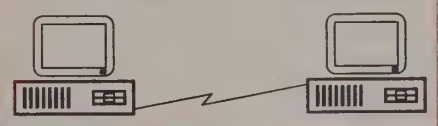

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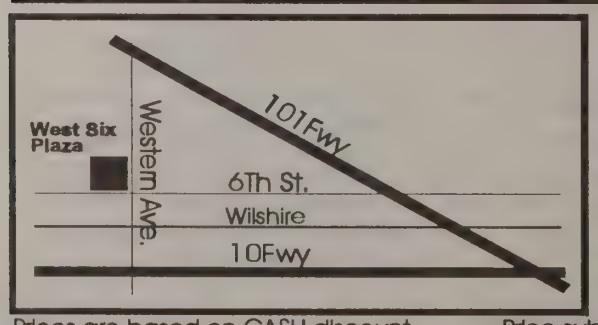

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Computer Of The Month

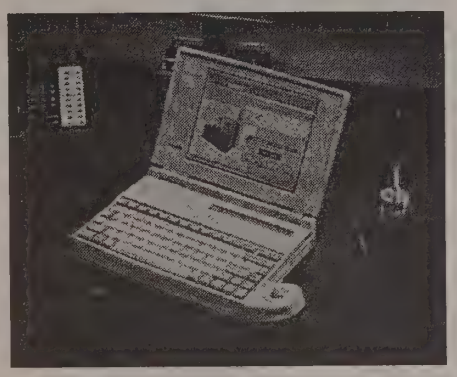
Toshiba's High End 4700CS

This month, I highlight a top-of-the-line computer. While there are many full-featured portables on the market, Toshiba has long been a market leader. The 4700 series comes in two models. The CS features, dual scan, passive matrix color display, while the CT has an active matrix display and is a bit more expensive. Both models come with either 200MB or 320MB hard drives and two PCMCIA slots. I examined the least expensive model of the 4700 series, the 4700CS with a 200MB hard drive and dual scan technology. Nevertheless, it carries a list price of $3699, which was recently reduced about 19%.

You might expect to get a lot for this price and Toshiba will not disappoint you. The processor is an Intel 50MHz 486 DX-2. If this is not fast enough, you can get their newest high-end model, the 4800, which features a 75MHz DX-4. The 4700CS, like the rest of the series, comes with 8MB of RAM. This is the first machine I have seen that comes standard with this much memory, but I must say that increasingly I find a need for this much memory.

Toshiba has long made the best keyboard in the business. Nowadays, almost everyone has copied their layout. In some ways this is like the early days of automobile design when manufacturers were still trying to determine the best way to arrange gear shift levers. Some worked in the standard H pattern, while others used a mirror image of that pattern, placing reverse rather than first gear in the lower left corner. Eventually, everyone adopted a standard "interface." Toshiba still stays a step ahead.

Toshiba has long made the best keyboard in the business. Nowadays, almost everyone has copied their layout.



The standard keyboard on portables do not have an Fn key and if you plug a PS/2 keyboard into most portables, you would not have access to the Fn key. But Toshiba now gives you several alternative ways to replicate this key on its keyboard.

The screen on the 4700CS measures 9.5" diagonally and provides an excellent display. Of course, you can easily attach an external monitor and then display on either the internal or external screen or both. This computer was designed for multimedia with a focus on video. The video is local bus and has an accelerator, both of which make for faster display.

The multimedia capability of this computer is emphasized by a built-in microphone as well as jacks for plugging in both an external microphone and speakers. Software lets you add sound to other applications and also lets you output to video.

The 4700CS is also designed to run Windows, which comes bundled. Accordingly, in addition to a dedicated mouse port (and the keyboard port), a track ball is included. It works well and I might even end up using this one rather than adding a separate mouse. Toshiba's design team always stays ahead of the competition.

Toshiba's documentation is excellent, as always. A small Getting Started manual walks you through what you need to know to begin. A hefty reference manual takes you deeper into the details of the computer. If you are on the go, the software containing all of the documentation is easy to access. Hypertext makes it easy to move from one place to another and is actually easier to navigate than the printed documentation.

A final feature of this Toshiba is the three-year parts and labor warranty. Not only does this beat anything else available in the industry, but there are additional, optional plans to suit your needs. These include things like door-to-door service and special coverage for the display, which is expensive and if broken can break you as well.

As you might expect, there is more to say about the Toshiba 4700CS, but be assured that portability was at the core of its design. It weighs less than 7lbs. and has a nickel metal hydride rechargeable battery pack that recharges in an hour and a half. If you are in the market for a high-end portable computer, the 4700CS may be just what you are looking for. ■

RESOURCES:

ScanMan PowerPage Scanner, $799
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Toshiba 4700CS, $3699
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Big Players Line Up Behind National Information Infrastructure

New Opportunities (And Hazards) In The Future Of Telecommunications

So far, the closest thing we have to the much-ballyhooed information superhighway is the Internet, which has grown in recent years from a domestic research network to the world's largest network, and a public and private amalgam of information and services. But the very structure and mission of the Internet, as well as of other information infrastructure elements, is the topic of debate among lawmakers and policy analysts in Washington, DC. Currently there are more than thirty different information-oriented bills and proposals being discussed in and around the Congress.

As you might expect, long-distance and local telephone companies, along with cable TV companies, are spending lavishly in that town. Their goal: to make sure none of the new laws or regulations put forth in the near future will undercut their existing businesses or prevent them from making money from the new opportunities they expect to discover or develop in the near future.

For the major players, one of the most critical elements is to get Congress to deregulate the information marketplace. Of the many pending bills and proposals, here are just two examples:

One important bill—the National Communications Competition and Information Infrastructure Act proposes to open local telephone markets to cable providers and in return would allow the regional Bell operating companies to offer cable-like services through their own network!

Another prominent piece of proposed legislation—the Emerging Telecommunications Technologies Act—would free the telephone companies to provide long-distance services and provide their own content (news digests, stock information, etc.) for network subscribers.

At this point in the debate, service and network vendors are strong advocates of reduced government "interference" in the free flow of information and the various markets for information services. These are many of the same organizations that insisted on tight regulation when the big issue appeared to be that new players might enter their existing service areas and take away some of their monopoly revenues. Now that demand is judged to be rapidly expanding, they have suddenly reversed their position and seen the light: only the free market should govern the information industry.

One of the most heated debates centers around the Internet itself. Long a model of information democracy (some might say anarchy) in which virtually any small player could become an information disseminator, provide information services, or make use of other people's information services at relatively low cost, today there is talk of taking the Internet private.

There are also a great many special interests who, in jockeying for individual business advantages, are attempting to make regulatory changes that may not be very good for the rest of us. For example, lobbyists for fiber optic cable manufacturers have already defeated certain "Open Platform" proposals that would have enhanced cheap universal access to the national information infrastructure. The reason: These methods would have worked on existing coaxial cables, lessening some of the incentives to lay new fiber.

These players have millions to spend on campaign contributions, perks, parties, and other favors for lawmakers. There is practically no one with anything like these well-financed war-chests to catch and hold a legistator's attention who is arguing for cheap rates, open architectures, public access, or making available, online and at cost, all government information.

Congress may well turn out to be more intent on protecting and encouraging specific information markets, rather than protecting and encouraging the public interest.

Vice President (formerly Senator) Gore has done a great job bringing the issues of information processing and dissemination to the attention of more and more people in the nation and the world. During the 1992 campaign he spoke of creating an information infrastructure that would be widely accessible and oriented toward community-building activities, as well as toward business. But as the government's most vigorous proposals (and shyness about putting forward other proposals) for the future of information processing in this country become more apparent, experts are noticing more emphasis on the business potential of movie rentals and sitcom reruns than on the social and general economic potential of telecommuting, or of telecommunications for education and economic development.

In my opinion, Congress may well turn out to be more intent on protecting and encouraging specific information markets, rather than protecting and encouraging the public interest. If the wrong laws are passed, we may lose a once-in-a-lifetime opportunity to structure the future of information dissemination and usage, and of information-based power in this society for generations to come. During the 1930s and 1940s, we lost the battle to have radio developed as a noncommercial medium. As a result, the advertisers now control the major voice in America: television. It would be a shame if we now lose an equally important battle to have computerized information networks developed for the public's benefit only to watch it developed solely for private gain.

One watchdog that is monitoring and

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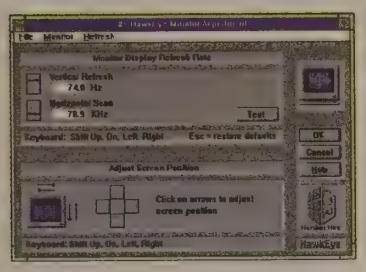

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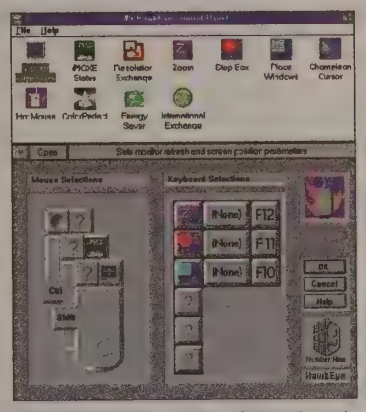

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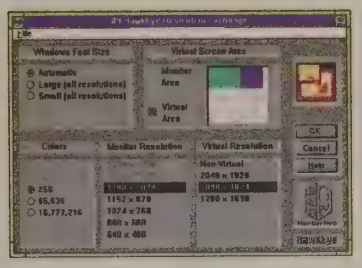
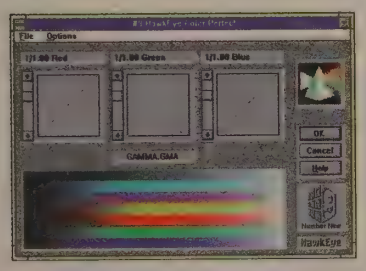
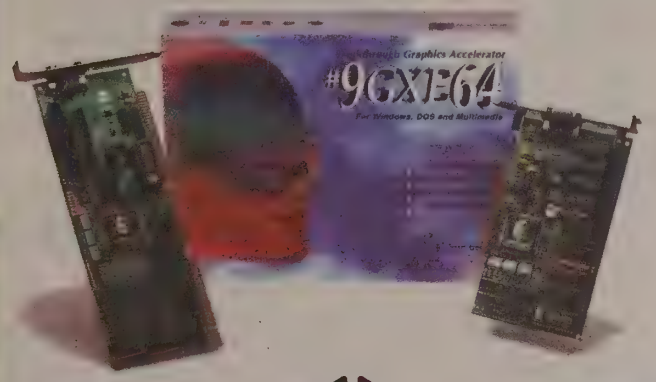
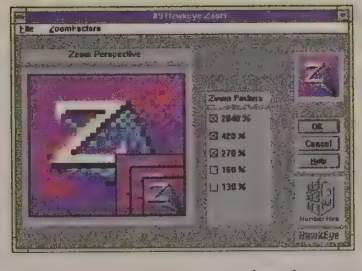


Resolution Exchange: An all-in-one resolution control center to easily select color depth, screen resolution and virtual desktop size.

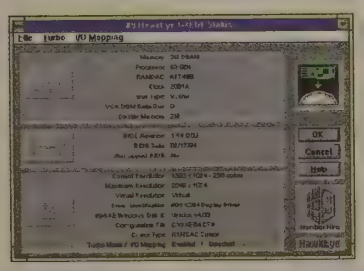


Color Calibration: Match screen tones to Pantones® or any other check-standard for color accurate pre-press results. (GXE64*Pro* only)

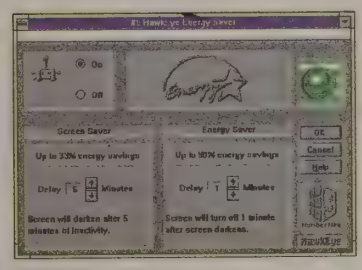




Hardware Zoom: For close-up views, instantly magnify your screen up to five times normal size. Panning brings every pixel into view.



Instant Status: Hardware and software configuration data is immediately available to quickly pinpoint system state-of-health.



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reporting on the emerging outlines of the national information infrastructure is the Information Infrastructure Clearinghouse project. Although the staff is small, they make an effort to help all comers. For more information, contact: Tom Freebairn, Information Infrastructure Clearinghouse Project, c/o Benton Foundation, 1634 Eye St., N.W., 12th Fl., Washington, DC 20006. Telephone: (202)638-5770. Fax: (202)638-5771.

You can also access the National Telecommunications and Information Administration through various means: To reach the NTIA BBS via Internet: ntiabbs.ntia.doc.gov; or iitf.doc.gov . To reach the NTIA BBS via dial up: (202)482-1199; set your modem to 2400 or 9600 baud, with 8 data bits, 1 stop bit, and no parity.

I have more government access addresses, mostly on the Internet, mostly gleaned from activists who are exploring ways to keep track of what our government is doing. If you would like me to email you my most current (but far from complete) list, email me with your email address at rmoskowitz@aol.com .

Los Angeles County Telecommuting Works Well, Wins Recognition

Choosing among more than sixteen hundred applicants, the Ford Foundation and the John F. Kennedy School of Government have granted the Los Angeles County Telecommuting Program a $100,000 award as one of the nation's top ten public programs in 1993 to address such important issues as increasing productivity, balancing work and family responsibilities, improving air quality, reducing traffic congestion, and maximizing use of tax dollars.

This should not be surprising to anyone familiar with the Los Angeles County program. Since it authorized its first telecommuter in 1989, the county has steadily supported a shift in this direction, until it now employs more than three thousand active telecommuters. These mobile workers average about 1.8 days of telecommuting per week, with some telecommuting only one day each week while others telecommute four out of five work days.

The county's telecommuting efforts—part of an overall effort to improve quality of life for employees and residents in the county—are aimed at six major objectives. These include:

1. Provide county employees with a "family-friendly" workplace.

2. Improve employee productivity.

3. Enhance the opportunities for flexible resource management, including better use of office space and equipment, and better recruitment and retention of top-quality employees.

4. Reduce employees' use of sick leave.

5. Improve employees' morale.

6. Improve air quality and reduce traffic congestion by reducing the numbers of cars that county employees drive to work each day, and the distance each one covers.

Part of the reason the county telecommuting program runs as smoothly and quietly as it does is that its telecommuting program managers and coordinators help

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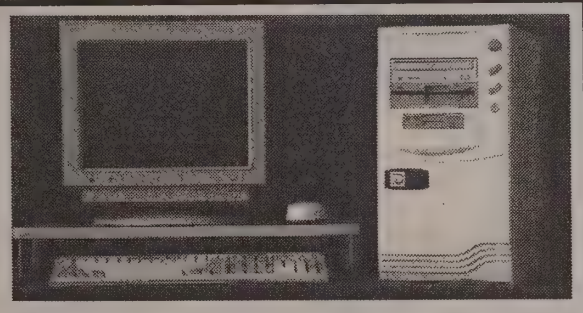

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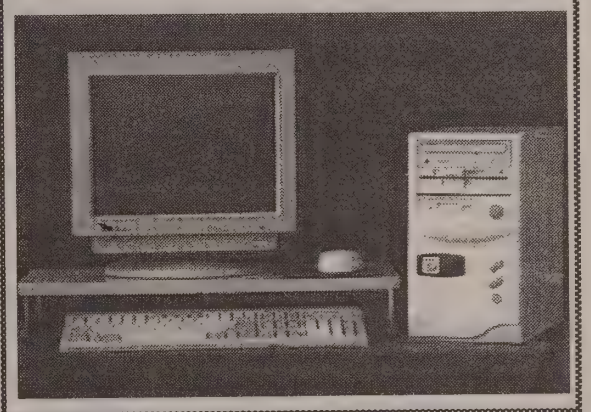

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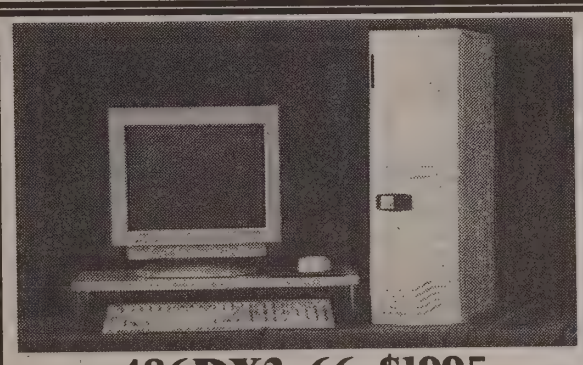

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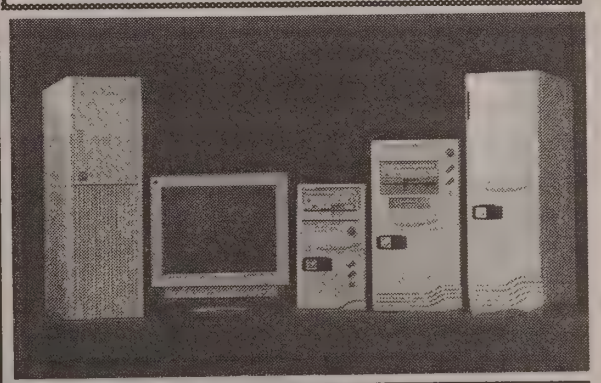

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Telecommuting *continued*

select candidates very carefully. They also provide every new telecommuter with training and written guides to telecommuting, and are available for ongoing support after they begin. Another factor is that the County's telecommuters are volunteers, and are thus highly motivated to succeed.

The County defines telecommuting very broadly as "working at a location other than the conventional office." This allows telecommuters to set up a workplace and arrange a schedule most conveniently without running into unnecessary bureaucratic strictures. Under the County's telecommuting guidelines, there are four different program options:

Home-Based Telecommuting. By far the most popular, telecommuters who select this option are given the time to fix up a workstation at home. From there, they communicate with their offices and clients via ordinary "dial-up" telephone lines. Some use enhanced technology, such as computers and modems, voice mail, fax machines, and beepers to remain in closer contact. In some cases, the county identifies nearby offices or commercial establishments where telecommuters can get support services they may need from time to time, such as secretarial work and copying.

The Facilities Exchange Project. The first of its kind, this program seeks to identify vacant or underutilized government offices near the homes of government employees who would like to telecommute. County employees can travel to nearby city, county, or state offices located within Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties, and telecommute from there instead of from home. The program also permits employees of other participating governments to make use of available county facilities.

Antelope Valley Business Centers. Even before the January earthquake, Los Angeles County had room for three hundred telecommuters per week at well-equipped workstations in the northern part of the county. Since the earthquake, more workstations have been added and more telecommuters have been assigned to these centers. Working at these locations saves most telecommuters a 20- or 30- mile trip each way to their regular county office.

Emergency Telecommuting. In an area known for recurring earthquakes, wildfires, floods, and mudslides that can interfere with normal business operations and disrupt freeway travel for long periods of time, county administrators consider telecommuting a valuable tool for maintaining services during and after emergencies. The county has a plan to place key employees in temporary office space or even at home, where with minitraining sessions and guidance about using local services they can continue to do their jobs despite specific highway, power, or telephone disruptions due to an emergency.

It would be a shame if we now lose an equally important battle to have computerized information networks developed for the public's benefit only to watch it developed solely for private gain.

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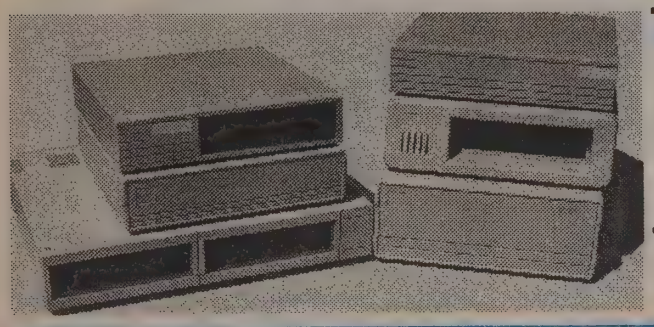

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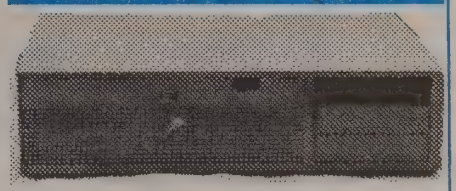

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GC9100 (1 Gig. Gigatrend tape)..$19.00

Floppy Drives

Used 360K 5.25" Drive.....$14.95
Used 1.2 Meg 5.25" HH $35.00
Used 720K 3.5" Drive.....$29.00
IBM PS/2 720K Drive OEM $29.00
5.25 --> 3.5 Floppy Adapter....$2.95

Laptop Carry Case
15.5" x 12.5" x 2.75"

$19.95

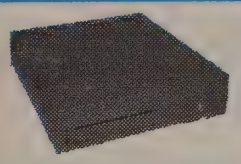
Exterior pocket 13" x 9" x 1.5". Interior has positionable retainer and small "attache" panel for 3.5" disks, pens, papers. Padded case. Black with red highlights, carry handle, shoulder strap. Originally for Digital.

Notebook Carry Case
12.25" x 10" x 1.75"

$14.95

Exterior pocket 12"x 6"x 1.75" Brow Vynil exterior. Inside pocket holds a small stack of papers. Batteries and other accessories fit outside. Shoulder strap only. No handle.

Tujitsu Cash Drawer



Hooks to Receipt printer w/RJ45 cable. Till included!

$75.00

Refurbished Printers

Epson FX 100 .....$65.00
Epson FX286 .....$75.00

Chips & ROMs

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V20-8.....$2.00 V28-10.....$6.00
16550 (Enh.serial port chip).....$13.00
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RAM

4116, 4164 or short lead 41256 -12 or -15 .....50¢
41024 (1 Meg x 1) $3.00
256x8 -15 SIMM...$3.00 / -12.. .....$4.95
256x9 SIP -12. .....$5.95
256x9 SIMM -80.....$10.00

Batteries

1/2 AA size, 3.6V lithium.....$4.95
AT Type "plug in" 3.6V or 6V $6.95

Cables & Connectors

DB25 IDC (Flat ribbon) conn. M/F..49¢
DB37 IDC (Flat ribbon) conn. M....49¢
IDE or Floppy (Flat ribbon).....$1. ea.
MFM/RLL/ESDI Cable Set.....$2.00
Power Y Cable. 4 Pin type.....$1.00
Power Extension 16". 4 Pin $1.00

Serial Link Cable

To link two computers for data transfer. Ends. Can be DB9 to DB9 or DB9 to DB25.....$9.95

Data-Trans

Transfer data between two computers at a high speed between two parallel ports.....$59.00

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271000 (32 Pin) $4.00
27010.....$6.00

Microcontrollers

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8749.....$6.00
8751.....$9.00

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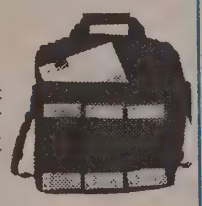
16" x 16" x 7"

$14.95

Olivetti Carry case. Can be used to carry many different computer systems. Apple //e, Mac II, IIci & most Mini Towers Sturdy construction, heavy fabric, shoulder strap & handle. Blue color only.

Laptop Carry Case
12" x 15" x 2.75"

$19.95



Zippered Exterior pocket 12" x 12" x 1". Carry handles & Shoulder Strap. Greenish color. Originally for Mitsubishi.

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9" Composite "Box" type cabinet. Green screen. Good for **security monitor.** Input for 75Ω (standard) or High impedance $35.00

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Used/Refurbished Mono. DB9 .....$35.00

Refurbished System Specials

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360K Drive $95.00
AT System • Packard Bell • Mono Monitor
8 Mhz • 2688K • 1.2M Drive $195.00
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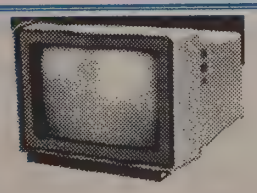
4096K 1.44M Drive $349.00

Olivetti 9" Monochrome VGA Monitor. Excellent for small places, where color is not needed. Makes a great POS terminal. Use for word processing, accounting and more! Standard VGA 640x480 resolution. Windows looks really good! Excellent Sharp Picture. Very Nice!.....$119.00



9" MonoVGA

Peripheral Cards

AST Advantage/2 (PS/2 Model 50/60) Memory Expansion. 8 Meg. Uses SIMMs (Zero K).....$19.95
Advantage/2 SIMMs. 1x9 -10 (each SIMM).....$29.00
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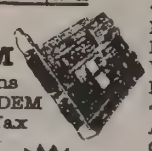

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Aero 4/25/84Mb 999
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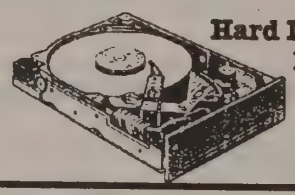

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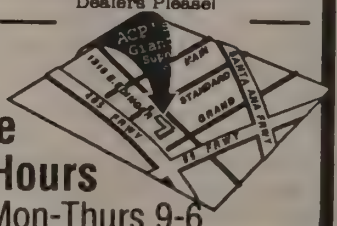

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Los Angeles Telecommuting Centers Filling Up

According to the *Los Angeles Times*, the Antelope Valley Telebusiness Center is already fully utilized. The forty telecommuters who work at the recently opened facility more than thirty miles north of Los Angeles are reportedly driving 25,000 fewer miles each week and reducing air pollution by 700 tons of unwanted material.

The center, about fifteen minutes from most of its occupants' residences, is far closer than the one hour or longer travel time required to reach their regular offices in the San Fernando Valley. Users of the business centers are charged $20 per day for use of the facilities, but those who sign a six-month lease get three months free rent.

A second telecommuting center in the Antelope Valley, which has been open for more than a year, remains at only 50% occupancy.

An Emerging Virtual Community

In the last several months, I have become increasingly aware of communities of people who are banding together by network and physical proximity to create old-style "village" environments. Now I've read in the *Los Angeles Times* of an electronic village taking shape within Humboldt, Del Norte, Mendocino, Trinity, and Lake counties of northern California.

Launched in 1993 by Larry Goldberg, a transplanted New Yorker who provides computer consulting services from his home in Trinidad (California) and his office in Eureka, the "Northcoast Electronic Town" (NET) is intended to fulfill a wide range of social and economic needs for a community of people too widely separated to see each other in person every day.

Goldberg charges $10 a month to use NET, and presently has enough subscribers to support some very interesting services. Subscribers can:

- Check the schedule of plays offered at the local repertory theater;
- Join a "coffeehouse" discussion;
- Study the availability of grants and of like-minded professionals to help support economic development in the NET region;
- Read local news, or even Shakespeare, online; or
- Order groceries from a local food store.

Of course, the NET also provides more conventional electronic services, such as access to national and international news, email, and a certain selection of user-group discussions and databases through limited access to the Internet.

So far, about two hundred local residents reportedly have signed up for NET access, but Goldberg plans to have one thousand or more subscribers fairly soon. For more information, contact Larry Goldberg directly at (707)677-0822.

I'd love to hear about other community networks, whether organized like Northcoast Electronic Town or organized some other way. As I learn about them, I'll pass along word of these and other developments in this space. ■

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MEMORY

DON'T RELY ON YOUR MEMORY, RELY ON OURS

CACHE MEMORY

	15NS	20NS	25NS
8Kx8	5 50	5 00	4 50
32Kx8	8 25	7 75	7 00
64Kx1	10 25	9 00	8 00
64Kx4	11 00	9 00	8 00
16Kx4	8 00	7 00	6 00
128Kx8		42 00	32 00

INDIVIDUAL D-RAM CHIPS

	60NS	70NS	80NS	100NS
1Megx1	7 35	7 25	6 75	4 95
1Megx4	35 00	29 00	27 00	
1Megx4(Z)	27 00	25 00	23 00	
256 x 4	7 95	6 95		
256 x 4 (Z)			11 95	10 95
256 x 1	3 00	2 75	2 50	2 25
256 x 16		39 00	39 00	
64 x 4			3 25	
64 x1				2 00

SIMM MODULES (Add $5.00 for SIPP)

	60NS	70NS	80NS	100NS
1Meg x 9 (3 Chip)	41.00	38.00	37 00	
1Meg x 9 (9 Chip)	47.00	45.00	44.00	34 00
4Meg x 9	157.00	150 00	141.00	
16Meg x 9		575 00		

72 PIN SIMM MODULES

		60NS	70NS	80NS	100NS
256 x 36	1Meg			59 00	
512 x 36	2Meg		89 00	84 00	
1 x 36	4Meg	175 00	165 00	157 00	
2 x 36	8Meg	335 00	320 00	310 00	
4 x 36	16Meg	670 00	635 00	625 00	
8 x 36	32Meg	1349 00	1299 00		
16 x 36	64Meg	CALL	3516 00		

AST MEMORY MODULES

AST Part #	MODEL	PRICE
500987-001	Bravo LC 4/25S,4/33, etc 2Meg	120 00
500987 002	4Meg	179 00
500987-003	8Meg	395 00
500987-004	16Meg	619 00
500987 005	32Meg	1399 00
	Premium 486/25,25E,33 33E	
	Premium 386/33TE,486/25TE,33TE	
	Prem Serv.Prem II 386SX/20,25	
500780-001	Prem II 386/25,33,486/33,SX20 (8Meg)	398 00
	Premium 386/33T,Prem 386SX/16	
500780-004	Prem II 386SX/20 25	189 00
501159-002	Premia 8Meg	379 00
501159-003	Premia 16Meg	789 00
501159-004	Premia 32Meg	1469 00
501159-005	Premia 64Meg	3111 00

COMPAQ MEMORY MODULES

COMPAQ #	MODEL	UP. AMT	PRICE
115144-001	DeskPro 386/33 386/33L,	2 Meg	109 00
116561-001	486/25 486/33L,	8 Meg	429 00
116568-001	486/50L, System Pro	32 Meg	1459 00
113131-001	DeskPro 386/25 386/20	1 Meg	79 00
113132-001		4 Meg	219 00
113633-001	DeskPro 386S-16Mhz	1 Meg	79 00
112534-001		4 Meg	219 00
113131-001	DeskPro 386/25E	1 Meg	79 00
113132-001		4 Meg	219 00
116586-001	DeskPro 286N, 386N	1 Meg	59 00
118689-001	386SX/20,25M,486/33M	2 Meg	89 00
118690-001	486S/25M,486S/16M	4 Meg	180 00
128877-001	Port I Series 486C	8 Meg	389 00
106071-001	DeskPro 386/16	1 Meg	99 00
106072-001		4 Meg	299 00
113012-001	DeskPro 286	512K	49 00
149911-001	DeskPro 5/60,5/66M	8 Meg	389 00
149949-001	Prosignia 5/60	16 Meg	739 00
149912-001	Prokant 100 5/60	32 Meg	1599 00
149913-001	Prokant 200/4000 etc	64 Meg	2700 00
141736-001	Prolinea 386 3/25S, 3/25ZS	2 Meg	109 00
141742-001		8 Meg	320 00
141683-001	Prolinea 466 4/25S,4/33	2 Meg	95 00
141684-001	4/50,4/66,CDS	4 Meg	180 00
141685-001		8 Meg	399 00
141685-001	Prosignia PC Server	8 Meg	399 00
149320-001	486/33,486 DSX/66	16 Meg	719 00
148147-001		32 Meg	1525 00

ZENITH MEMORY MODULES

Zen Part #	MODEL	UP. AMT.	PRICE
ZA3800ME	Z386/33 25,20,33E	1 Meg	59 00
ZA3800MK	Z386/33,25,20,33E,486/25E	4 Meg	180 00
Z-505-1	Z386SX	2 Meg	119 00

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IBM PT. #	MODEL	UP. AMT	PRICE
30F5348	30-286	512K	37 00
30F5360	30-286,25-286,50 MTHR BD	2Meg	104 00
6450375	80-041	1Meg	79 00
6450379	80-111,311-121,321,081,161	2Meg	84 00
6451060	80-A21,A-61,80-A31,80-111	4Meg	169 00
6450604	70-061,E61,121,50Z,55SX,65SX, P-70,55LS,65LS,X-Ste 1206130	2Meg	89 00
6450608	70-A21,A-61,B-21,B-61,35SX,LS	2Meg	90 00
78X8955	25	128K	35 00
34F2933	35SX,40SX,55SX,65SX,LS,55LS	4Meg	180 00
87F9977	55SX,55LS,65SX,40SX,35SX,LS	4Meg	180 00
1057035	P/S1 286	512K	49 00
92F0935	P/S1 & P/S1/386SX-2121	2Meg	99 00
92F9694	P/S1 & P/S1/386SX-Model 2121	4Meg	189 00
6450902	56,57,57SX,90,95,P-75,57SLC Value Pt 77 486DX2,SX,SVR 85	2Meg	90 00
6450128	57SX,90,95,P-75,57SLC,56,SLC P/S1,386SX-2123,2133,2155,Val Pt 77 486DX2,SX,SVR 85	4Meg	175 00
6450129	35SX,40SX	8Meg	379 00
6450130	56,57 57SX,90,95,P-75,57SLC	8Meg	379 00
4010	RISC System/6000	16Meg	769 00
4033	RISC System/6000	32Meg	1699 00
4036	RISC System/6000	64Meg	3319 00

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MFG PT #	Model	UP AMT	PRICE
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310-2625	Pow er Desktop 486D,486P	16Meg	789 00
310-2468	PowerLine Workstation 420,425	2Meg	119 00
310-2467	433,450,450DE/2,486DE	4Meg	229 00
310-2468		8Meg	459 00
310-2469		16Meg	909 00
310-2630	1420,25,33,50,50SE/2,66SE	32Meg	1549 00
310-3325	Performance TL, & M Series	4Meg	259 00
310-3327		16Meg	979 00
310-3334	Performance ME Series	4Meg	229 00
310-3335		8Meg	459 00
310-3336		16Meg	789 00
310-3337		32Meg	1619 00

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	Performa 200,400 600	8Meg	349 00
	Macintosh Quadra 700,900,950	4Meg	249 00
		16Meg	589 00
		32Meg	1479 00
		64Meg	2819 00
	Macintosh IIfx	16Meg	699 00
		64Meg	2789 00
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		8Meg	399 00
M1508LL/A		16Meg	729 00
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		6Meg	369 00
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		8Meg	389 00
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129769-002	LTE LITE/20 25,25C	4Meg	229 00
129769-003		8Meg	375 00
129769-004		16Meg	809 00
142337-002	LTE LITE 4/25C 4/23E,433C	4Meg	199 00
142337-003		8Meg	384 00
142337-004		16Meg	769 00
110235-001	SLT/286	1Meg	75 00
110237-001	SLT/286	4Meg	249 00
118303-001	SLT/386	1Meg	79 00
118304-001	SLT/386	2Meg	109 00
118305-001	SLT/386	4Meg	209 00
144790-001	Concerto	4Meg	200 00
144790-002		8Meg	395 00
113132-001	Deskpro 386/25/20/25e/20e	4Meg	199 00
139497-001	Contura 320, 325	2Meg	104 00
139498-001		4Meg	189 00
[illegible]		8Meg	349 00
146520-001	Contura 2/25,4/25C 4/25CX	4Meg	189 00
146521-001		8Meg	345 00
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IBM Part #	MODEL	UP. AMT	PRICE
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79F1000	LX40,N33SX,PS Note,Thinkpad	4Meg	199 00
79F1001	LX40,N33SX,PS Note	8Meg	349 00
07G1826	N51 (all)	2Meg	103 00
07G1827		4Meg	199 00
07G1828		8Meg	419 00
53G6958	Thinkpad 710T	2Meg	110 00
53G6959		4Meg	220 00
53G6960		8Meg	420 00
07G1414	Thinkpad 750 750c	2Meg	119 00
07G1415		4Meg	209 00
07G1416		8Meg	395 00
66G0094		16Meg	959 00
07G1420	CL57LSX LpTp,Thinkpad 700,	4Meg	209 00
07G1421	700C,720,720C	8Meg	395 00
60G0378	Thinkpad 350,350c	8Meg	359 00
60G0379	Thinkpad 350,350c	16Meg	679 00
92F8804	N45SL	2Meg	109 00

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MFG Part#	MODEL	UP AMT	PRICE
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PC18-PA8317U	T2000/T2000SX	4Meg	94 00
PC-PA8314U	T2000SX/T1000LE	4Meg	209 00
PC14-PA8315U		8Meg	399 00
PC-PA2000U	T2000SX/E/2200SX/T1600,	2Meg	94 00
PC-PA2001U	1850 C	4Meg	195 00
PC-PA2002U		8Meg	399 00
PC-PA2004U	T4400SX, SXC T6400	4Meg	209 00
PC-PA2005U		8Meg	399 00
PC-PA2010U		16Meg	704 00
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PC15-PA8308U	T3100SX	2Meg	109 00
PC15-PA8310U	T3100SX	4Meg	209 00
PC6-PA7137U	T3200	3Meg	185 00
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PC12-PA8309	T3200SX	4Meg	209 00
PC19-PA8318U	T3200SX/C	2Meg	119 00
PC19-PA8319U	T3200SX/C	4Meg	219 00
PC17-PA8301U	T5100	2Meg	95 00
PC10 PA8304U	T5200/T8500	2Meg	114 00
PC10-PA8313U	T5200/T8500	4Meg	419 00

NOTEBOOK AND LAPTOP MEMORY

MFG PART #	MODEL	UP. AMT	PRICE
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12407980	ALR Venture	4Meg	249 00
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	AST Power Exec 3/25C,425EL	16Meg	695 00
501166-001	AST Power Exec 425SL	4Meg	199 00
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[illegible]	Epson NB3	4Meg	229 00
	Gateway 2000 Nomad 425	4Meg	199 00
PC21-21	NEC Prospeed 286,386SX-16	1Meg	79 00
PC21-22	NEC Prospeed 286 386SX-16	4Meg	189 00
PC31-21	NEC Prospeed 386	2Meg	119 00
PC31-22	NEC Prospeed 386	8Meg	399 00
PC43-21	NEC Prospeed 386SX-20	1Meg	79 00
PC43-22	NEC Prospeed 386SX-20	4Meg	199 00
PC47-21	NEC Ultralite III/20,20F,25C	2Meg	109 00
PC47-22	NEC Ultralite III/SL/25C	4Meg	199 00
PC49-21	NEC Ultralite SL/20,20F	6Meg	309 00
OP4194	NEC Ultralite Versa	4Meg	209 00
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	Sharp 5781,6581,6785	4Meg	199 00
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Advertising On The Net

Solicited Vs. Unsolicited Information Is At The Heart Of The Matter Of Advertising On The Internet, USENET, And Many Other Networks

We recently co-sponsored a conference in Austin called Making Money on the Internet. How is that possible, since there is a widespread belief that even advertising is forbidden? Let's not try to address all issues of commercialization of the Internet here, but rather, let's focus on advertising.

Advertising on the net has hit the traditional news media lately, with various newspapers and occasional television shows reporting on recent postings advertising advice for getting your green card, a cream to thin your thighs, and a 900 sex number. Many of these reports have latched onto the angle of advertising, as if these postings were the first instances of advertising ever seen on USENET, the Internet, or related networks. I guess they never heard of the USENET newsgroups comp.forsale, misc.forsale, the more specialized newsgroups like misc.forsale.computers.workstations, or all the more local newsgroups such as tx.forsale, or, for that matter, all the *.marketplace and *.jobs newsgroups.

The problem with the particular postings we've mentioned was not that they were advertising, but rather how they were posted, namely to hundreds of newsgroups. This is called spamming, and it was spamming, not advertising, that was the main problem. USENET users like spamming about as much as they would having their office building spray-painted in gang graffiti.

If the *CBS Morning News* were suddenly interrupted during the weather report by an unscheduled advertisement for thigh cream, and the same thing appeared on all other television programs that day, in the middle of the Oprah Winfrey's latest revelations, preventing Jean Luc Picard from saving the cosmos, halting Rush Limbaugh in mid-complaint about Bill Clinton, I suspect many television viewers would be upset.

ClariNet is an information **service** using USENET news **technology** to distribute for-pay **newsgroups,** most of it **over the Internet.**

Television schedules commercials by time slot. USENET schedules advertisements by newsgroup. Posting to lots of inappropriate newsgroups is like broadcasting on television at lots of inappropriate times. Reporters don't seem to think of this analogy, probably because broadcasting on television is difficult, and posting on USENET is easy.

If you prefer, think of an analogy of a pirate radio station broadcasting on dozens of frequencies. I suspect Metallica and Travis Tritt fans would be just as annoyed as Nirvana or opera fans to have their favorite song interrupted in the middle by an ad for legal advice about the use of 900 numbers for purchasing thigh cream. The point here is not whether the radio station is KRAS or KNPR. The point is that the conventions of broadcasting in a limited bandwidth medium such as radio or television fit programs and advertising into time slots. The conventions of computer networks, where you have not half a dozen or forty channels, but thousands, are different.

As we were writing this, NPR (National Public Radio) carried a story which mentioned that the main daily newspaper in Topeka, Kansas once refused to print movie reviews because it considered them advertising. It seems that advertising is in the eye of the beholder even in the most traditional media.

The problem with postings such as the advertisement by Canter and Siegel of legal advice on getting a green card in the US Immigration lottery was not that it was advertising, but that it was rude. They didn't bother to follow the simplest convention of the medium they chose to use, namely posting only to a few appropriate newsgroups. Even if their posting had offered to give their advice away for free, it still would have been inappropriate because of how it was posted. What did it have to do with alt.sex or sci.geology, after all, newsgroups among those it was posted to? They are not heroes bringing the benefits of capitalism to a new market. They're just crass.

In fact, the more focused your posting is, the more likely you will not only reach your target audience, but also be accepted by them. If you want to sell a workstation, post your notice to misc.forsale.computers.workstations, not to talk.politics or rec.pets.cats. If you don't know which newsgroup to post to, read the misc.forsale FAQ (Answers to Frequently Asked Questions). It's posted to the misc.forsale newsgroups.

This is not to say commercial information can never be posted to USENET outside of certain newsgroups specifically designed for advertising. Far from it. Announcements of new products, bug fixes, answers to technical questions, and addresses for prices are all welcome in newsgroups related to a product, platform, or company. Hype and bragging about prices is generally unwelcome, it's true. If you write a message like a newspaper department store ad and post it to any USENET newsgroup, you will almost certainly get flamed. You have to tailor your message to the medium. You'll probably get flamed eventually anyway (it's customary on USENET, no matter what you post), but not as much.

Informational postings that include an electronic mail address or other pointer to a way a reader can ask for wanted information are generally welcome. Just stick a line on the end saying something like "for details about MIDS publications, send mail to mids@tic.com".

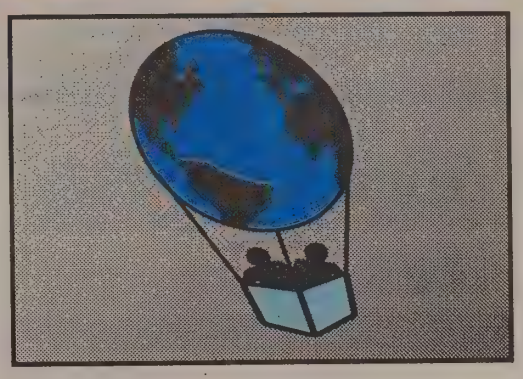
Let's not forget that a USENET posting is not static ink on newspaper. If you want

WE PUT YOU ON THE INTERNET

WHAT IS THE INTERNET?

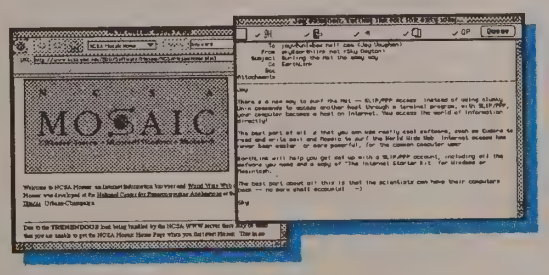
The **Internet** is a network of computer networks spanning the globe. It is a collective effort by millions of people to make computers talk to each other, and it has evolved into the most incredible communications medium the world has ever seen.

On the Internet, business people converse with associates, students search for information in thousands of databases and information resources, and ordinary citizens find, use, download, and originate information on a nearly infinite number of topics every day.



The Internet connects you instantly to over 20 million people around the world.

And whether you want to discuss politics, find a new distributor for your product, or play chess with friends in Moscow, you will find a home on the Internet.



We help set you up with Net "surfing" software such as Mosaic (left) and Eudora (right).

HOW DO I GET CONNECTED?

Until recently, getting connected to the Internet was a complicated procedure. Now, **EarthLink Network** connects you directly to the Internet from your home or business computer—fast and easily. All you need is a modem and the software we supply. We will answer all of your questions about the Internet and help you make it a useful and enjoyable part of your life.

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Television schedules commercials by **time slot. USENET** schedules advertisements **by newsgroup.**

more information, you don't have to write a letter, put it in an envelope, stamp it, give it to the Post Office, and wait weeks for a reply. You don't even have to call a telephone number and suffer through voice mail.

USENET itself provides only news, and for that matter isn't really even a network, for that same reason. But USENET news is carried over other networks, including BITNET, FidoNet, UUCP, and the Internet. All of them have electronic mail. If you want information, you can reply in seconds to the original poster, or to an address included in the posting. If the information provider has set up an autoresponder, you may get detailed pricing information within seconds. If you're on a slow network you may have to wait minutes or maybe even hours; still a lot less than days.

If you are on the Internet, you have a wide range of other options as well, including file location by archie and transfer by anonymous FTP, menu browsing with Gopher, database keyword searches with WAIS, and hypertext with World Wide Web (WWW). All of these are information services you can use if the information provider has supplied a server. Since you contact them when you want more information, there is no question of them forcing information on you. If you really want to provide information that looks like a newspaper department store ad, you can do that with WWW, and nobody will mind.

That's the key, whether the additional information is supplied by mail or by a more sophisticated service, such as through WWW with nifty color graphics displayed by Mosaic. The user asks for it. You don't force it on them. Yet the user can get it quickly and readily whenever it's wanted. So information postings on USENET (and in other media on other networks) can have more effect than full-blown advertisements in traditional media, because the information provider doesn't have to try to cram everything into a thirty second TV commercial or a half-page newspaper ad. Instead, the advertiser can provide pointers and let the user select the information desired.

But doesn't this violate the NSFNET AUP (Acceptable Use Policy)? And isn't the first rule of the Internet that it shall not be used for commercial gain? These are both questions that turn up again and again not only in reportage in the traditional media, but also on the net. The answers are no and no. Let's take them in reverse order.

Starting way back before the Internet, its predecessor, the ARPANET, was funded by US government money but largely built by private contractors. BBN, for example, was in it not only for the considerable intellectual interest, but also for commercial gain. It's also hard to believe that MCI and IBM

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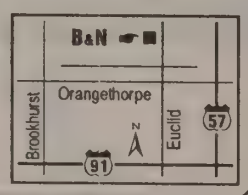

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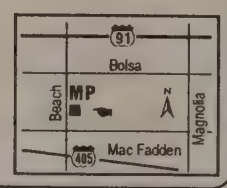

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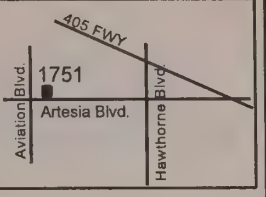

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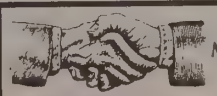

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have been involved with NSFNET for all these years without any consideration of eventual commercial gain. Many CIX (Commercial Internet Exchange) members, such as PSINet, AlterNet, and CERFNET are certainly providing Internet backbone services for commercial gain.

Many computer vendors, including Apple, Digital, and Intel, use the Internet to distribute information about their products, to communicate with their customers, to provide bug fixes and sometimes whole operating system releases over the net. They are using the Internet for commercial gain.

ClariNet is an information service using USENET news technology to distribute for-pay newsgroups, most of it over the Internet. It has been merrily doing this for quite a few years now, with nary a protest from anyone.

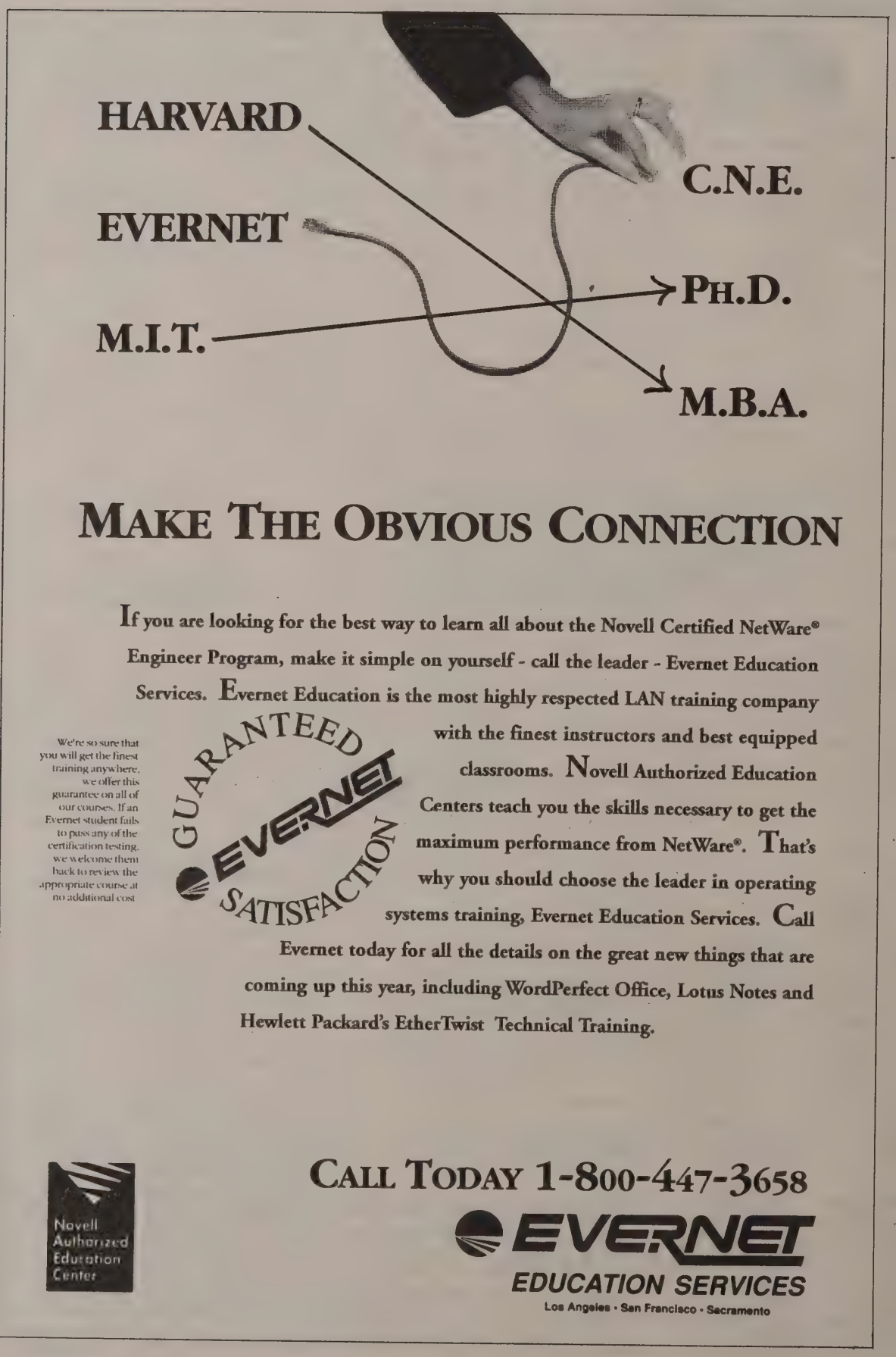
But what if ClariNet distributes over the NSFNET backbone, or Apple sends a price quote to a university over it? Doesn't that violate the NSFNET AUP, which says the NSFNET backbone (actually, it's the NSFNET backbone service these days) is only to be used for research and educational purposes? Nope. The NSFNET AUP includes a loophole you could drive a television studio through (actually, Carl Malamud already did that). It also says activities in support of research and education are OK. Translated, that means that if a researcher or educator asks for it, it's not a problem.

The NSFNET backbone service is increasingly irrelevant as an arbiter of behavior in the Internet anyway, now that CIX members supply several other national backbone networks in the United States, and almost half of all Internet users are in almost sixty other countries, which NSFNET does not reach.

The issue of solicited vs. unsolicited information is not irrelevant, however, and is in fact the heart of the matter of advertising on the Internet, USENET, and many other networks. Time does not limit what can be transmitted in the way it does on radio or television, but it does limit what computer network users can and are willing to read. Information overload is real, and unwanted information is even less welcome online than junk paper mail. The reason is much the same (waste of time and other resources). The reaction is often stronger, because junk online can arrive right on your disk and your screen.

It's as if the annoying car dealer who advertises on TV suddenly took to breaking into your telephone conversations and insisting on detailing how his prices are so much better than the competitions.' I might write letters to his company, to the telephone company, to the Better Business Bureau, and maybe the FBI. Is it any wonder that the online reaction to spamming is similar, especially since sending off an electronic mail message is so much easier than sending a paper letter.

Some say the real problem here is flaming. That is, that the spammers did nothing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to justify all the verbal abuse they're getting. Well, on the net, exactly what else is the recourse? Calling the FBI about anything online, experience shows, is likely to get you little action or potentially very inappropriate action. Law enforcement agencies in general have little knowledge of the online world and even less funding to get it. Besides, what law did Canter and Siegel violate? Apparently none. But that doesn't mean we want them in every one of our online salons.

Spamming does reduce the value of the net to its users. A few cases do not produce the long-predicted imminent death of the net. They are worrisome, however, because if a lot of people see spammers treated as heroes by the traditional media and choose to emulate them, an epidemic could ensue. The solution is not legislation, it is education.

Discussions of possible recourses on the USENET have gotten up to the idea of canceling offending articles. This is very worrisome in itself, because it raises the question of who decides what is offensive. USENET already has enough self-appointed censors at universities and companies. We don't need any more. We'd rather see the offenders flamed.

Practically, though, if the problem persists, spam articles will get canceled (it's already happened) and other measures will be taken, probably including isolating hosts that repeatedly post them. A better way would be for such posters to channel themselves into more appropriate newsgroups. Stranger things have happened on the net. As the influence of the net spreads to the general public, perhaps we'll see spamming recognized as bad manners.

Meanwhile, you can advertise on USENET and on the Internet. We've just told you how; now you don't need to pay anybody to learn it. Just follow the simple guidelines listed here and learn the rest as you go. ■

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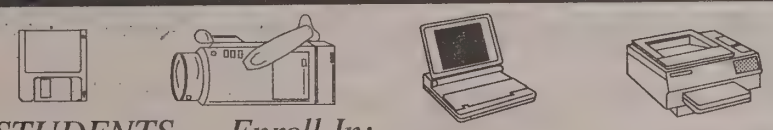

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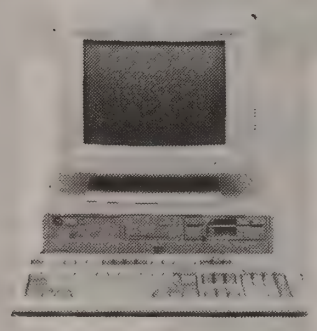

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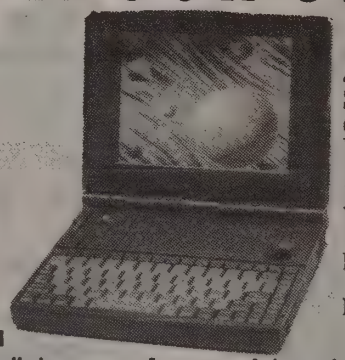

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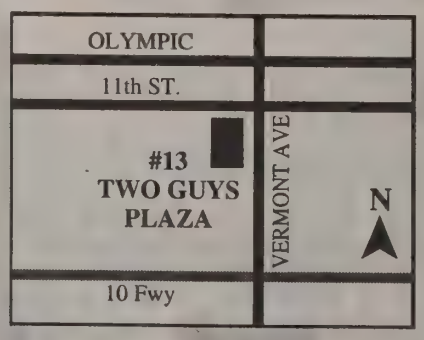

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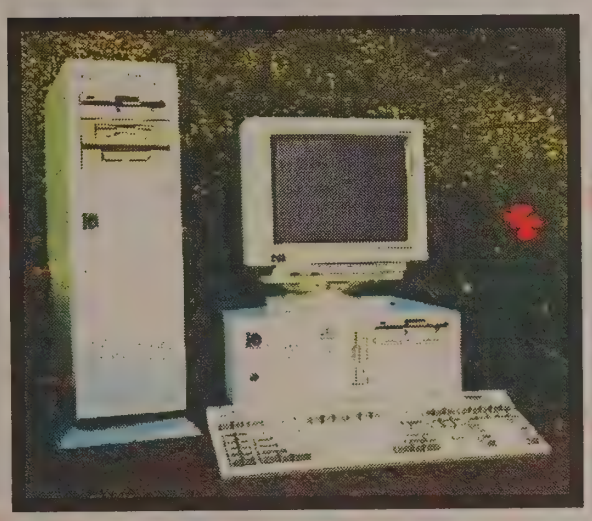

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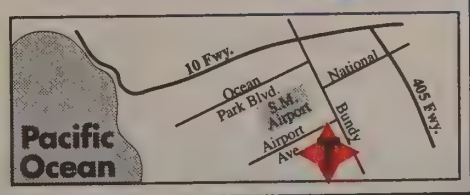

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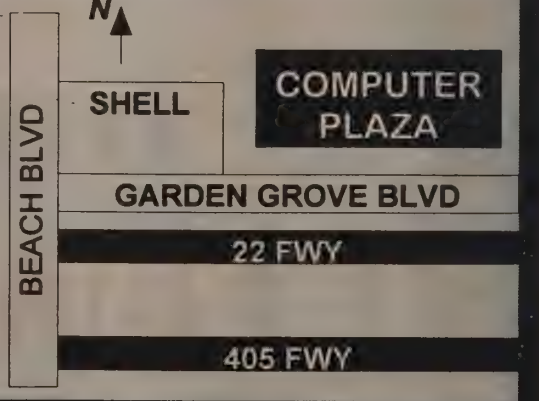

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INTEL 486DX4-100	$2,398.00
INTEL 486DX2-66	$1,988.00
INTEL 486DX-33	$1,948.00
AMD 486DX2-66	$1,958.00

- **INTEL PENTIUM OVERDRIVE READY**
- 4MB RAM (EXP TO 128MB)
- 256K CACHE MEMORY
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- **540MB SCSI HARD DRIVE**
- **32 BIT VL BUSLOGIC SCSI II CONTROLLER**
- **32 BIT VL BUS DIAMOND VIPER w/2MB**
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IBM 486SLC2-66	$ 978.00
AMD 486DX2-66	$1,068.00
AMD 486DX-40	$ 998.00
486DLC40 w/MATH CO	$ 898.00
386DX-40	$ 828.00

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- **420MB IDE HARD DRIVE**
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- **2 SERIAL, 1 PARALLEL, 1 GAME**
- **PCI ULTRA PRO SVGA w/1MB**
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- TEAC 1.2 MB & 1.44 MB FDD
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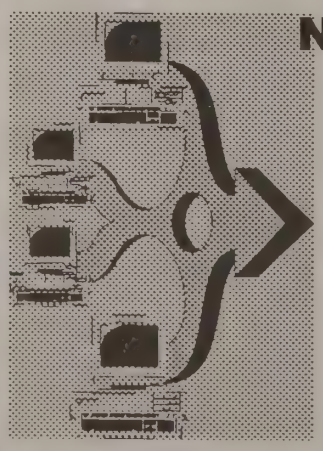

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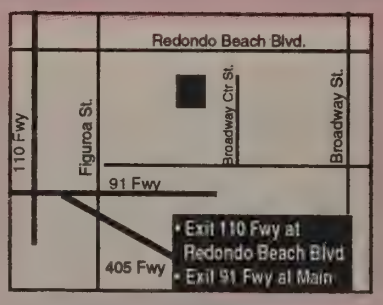

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SUPER HOT SAVINGS

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PENTIUM PCI SERVER

- 90MHZ Pentium CPU • Pentium PCI Motherboard
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- 1.2Mb & 1.44Mb FDDs • Full Tower Case
- Diamond Viper PCI Video w/ 2MB VRAM
- 101 Enhanced Keyboard
- 15" NI .28 Flat SVGA Monitor
- Hi-Res. Mouse W/ Pad

$2,699

486DX2-66MHz $1,125
486DX-33MHz $970

- Pentium Ready
- VESA Local Bus W/ 256K Cache Memory
- 4MB RAM W/ 250MB Fast HDD
- VESA IDE & IO Card (32Bit) • 1MB VESA SVGA Card (32Bit)
- 1.2MB & 1.44MB FDDs • Mini Tower Case W/ Display
- 101 Enhanced Keyboard • Hi-Res Mouse W/ Pad
- 14" SVGA Monitor

PENTIUM-66MHz PCI $1,979
PENTIUM-60MHz PCI $1,899

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- 1.2Mb & 1.44Mb FDDs • Medium Tower Case
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- 101 Enchanced Keyboard • 2S/1P/1G Ports
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- Hi-Res. Mouse w/Pad

MULTI MEDIA SPECIAL

- Panasonic Double Speed CD
- True 16 Bit Sound Card
- Speaker & Microphone
- 14 CD Titles • Software Included

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Intel 486DX4-100Mhz (Local Bus • 256K Cache)	486DX2-66Mhz (Local Bus • 256K Cache)	486DX-50Mhz (Local Bus - 256K Cache)	486DX-33Mhz (Local Bus • 256K Cache)	486DX-40Mhz (Local Bus - 256K Cache)	486DLC-40Mhz (w/ Math-Co)
$855	$505	$525	$420	$405	$245

486SLC2-66Mhz (Local Bus W/ Math-Co)	486SLC-33Mhz	386DX-40Mhz	386SX-40Mhz
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Systems Include:

- Mini Tower Case W/ 200W Power Supply • 1.44MB Floppy Drive
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ACCESSORIES

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1.44MB FDD	$38
MOUSE	$8
TRACKBALL	$20
96/24 Fax Modem (Int)	$39
14.4/14.4 Fax Modem (Int)	$89
250MB Tape Backup	$145
NE2000 Comp. Card	$39
16Bit Stereo Sound Card	$79
Dual Speed CD-ROM Drive (Sony 33A-1 Compatible)	$129
Sound Blaster 16-MCD	$159

MONITORS

SVGA 14" (.39)	$195
SVGA 14" (.28)	$215
SVGA 14" (.28) NI	$239
SVGA 15" (.28) NI, FLAT	$339

HARD DISKS

170MB IDE DRIVE	$175
210MB IDE DRIVE	$185
245MB IDE DRIVE	$215
340MB IDE DRIVE	$235
420MB IDE DRIVE	$255
520MB IDE DRIVE	$335

NOTEBOOKS

INEX 486SLC2-50MHz

4Mb Ram W/ 200Mb H.D.D
VGA-LCD Display
Cellular Voice/Fax/Data Modem

$1,295

INEX 486DX-33MHz

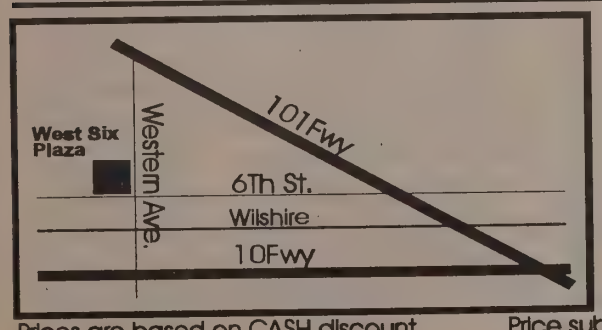
4Mb Ram W/ 120Mb H.D.D
Dual STN Color Display
Built-in Microphone & Speaker
Dual PCMCIA Slots

$2,195

HYUNDAI 486SLC-33MHz

4Mb Ram W/ 120Mb H.D.D
VGA STN Color
Built-in Trackball
PCMCIA Slot II

$1,895



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Industry Insights *continued from page 14*

NIGHTMARE ON WALL STREET TAKES TOLL ON COMPUTER STOCKS

EXCH	COMPANY		TICKER SYMBOL	CLOSING PRICE 05/27/94	CLOSING PRICE 06/24/94	NET CHANGE IN PERIOD	PERCENT CHANGE IN PERIOD	P/E RATIO	ANNUAL DIVIDEND RATE	ANNUAL DIVIDEND YIELD	ANNUAL HIGH	ANNUAL LOW
	SOFTWARE											
OTC	Adobe		ADBE	27.50	25.50	-2.00	-7.27	21	0.20	0.78	34.50	16.25
OTC	Aldus		ALDC	27.63	25.06	-2.56	-9.28	31	0.00	0.00	34.50	13.50
OTC	Autodesk		ACAD	52.00	48.63	-3.38	-6.49	19	0.48	0.99	61.75	37.00
OTC	Borland		BORL	9.75	8.75	-1.00	-10.26	-	0.00	0.00	23.25	8.50
OTC	Informix		IFMX	15.50	14.50	-1.00	-6.45	17	0.00	0.00	27.25	14.25
OTC	Lotus		LOTS	61.38	34.25	-27.13	-44.20	25	0.00	0.00	86.50	30.25
OTC	Microsoft	(H)	MSFT	52.38	49.50	-2.88	-5.49	28	0.00	0.00	54.63	35.19
OTC	Novell	(L)	NOVL	17.75	14.50	-3.25	-18.31	-	0.00	0.00	28.00	14.50
OTC	Oracle	(H)	ORCL	34.13	36.63	2.50	7.33	38	0.00	0.00	38.25	22.44
OTC	Software Publishing		SPCO	5.00	4.13	-0.88	-17.50	-	0.00	0.00	8.63	3.75
OTC	Symantec	(L)	SYMC	13.75	10.50	-3.25	-23.64	-	0.00	0.00	20.50	9.88
	HARDWARE											
OTC	Apple		AAPL	29.94	25.61	-4.33	-14.46	-	0.48	1.87	45.25	22.00
OTC	AST Research	(L)	ASTA	17.63	12.88	-4.75	-26.95	-	0.00	0.00	33.00	12.50
NYS	Compaq (s)		CPQ	38.83	31.00	-7.83	-20.17	14	0.00	0.00	39.88	14.38
NYS	Digital Equipment		DEC	22.88	19.88	-3.00	-13.11	-	0.00	0.00	43.13	18.25
OTC	Dell		DELL	28.81	24.13	-4.69	-16.27	-	0.00	0.00	30.75	13.50
NYS	Hewlett-Packard		HWP	79.00	76.00	-3.00	-3.80	15	1.20	1.58	93.63	64.38
NYS	IBM	(H)	IBM	63.63	59.88	-3.75	-5.89	-	1.00	1.67	65.00	40.63
NYS	Silicon Graphics		SGI	22.88	21.75	-1.13	-4.92	25	0.00	0.00	26.88	16.00
OTC	Sun Microsystems	(L)	SUNW	21.38	18.38	-3.00	-14.04	9	0.00	0.00	31.38	18.38
NYS	Xerox		XRX	101.13	97.75	-3.38	-3.34	-	3.00	3.07	104.88	69.88
NYS	Tandy		TAN	37.63	33.75	-3.88	-10.30	14	0.60	1.78	50.75	28.13
	CPU'S											
NYS	Advanced Micro Devices		AMD	26.25	24.38	-1.88	-7.14	10	0.00	0.00	32.75	16.75
OTC	Intel		INTC	61.38	58.38	-3.00	-4.89	11	0.24	0.41	74.50	49.25
NYS	LSI Logic		LSI	23.25	23.13	-0.13	-0.54	19	0.00	0.00	26.38	13.00
NYS	Motorola		MOT	47.00	44.88	-2.13	-4.52	24	0.28	0.62	54.88	41.25
	COMMUNICATIONS											
NYS	AT&T		T	54.75	53.75	-1.00	-1.83	18	1.32	2.46	65.00	49.50
NYS	BellSouth Corp.		BLS	59.00	60.13	1.13	1.91	25	2.76	4.59	63.88	53.00
OTC	MCI		MCIC	24.31	22.31	-2.00	-8.23	19	0.05	0.22	29.88	21.38
NYS	Northern Telecom		NT	31.25	28.00	-3.25	-10.40	-	0.36	1.29	33.75	21.38
NYS	Pacific Telesis		PAC	30.38	30.63	0.25	0.82	27	2.18	7.12	34.50	27.88

Note: Compaq completed a 3-for-1 stock split. Commodore has been delisted and removed from our list.

KEY: NYS = NEW YORK ASE = AMERICAN OTC = OVER THE COUNTER
(H) = NEW HIGH REACHED IN PERIOD (L) = NEW LOW REACHED IN PERIOD

MARKET DIARY:

ADVANCES	3
DECLINES	28
UNCHANGED	0
NEW HIGHS	3
NEW LOWS	4

MOST ACTIVE ISSUES:

LARGEST DOLLAR GAINER	Oracle	$ 2.50
LARGEST DOLLAR LOSER	Lotus	$ -27.13
LARGEST PERCENTAGE GAINER	Oracle	7.33 %
LARGEST PERCENTAGE LOSER	Lotus	-44.20 %

	CLOSE 05/27/94	CLOSE 06/24/94	NET CHANGE IN PERIOD	PERCENT CHANGE IN PERIOD
MICROTIMES STOCK INDEX	4709.29	4238.94	-470.34	-9.99
DOW JONES INDUSTRIAL AVERAGE	3757.14	3636.94	-120.20	-3.20
STANDARD & POOR'S 500 INDEX	457.33	442.80	-14.53	-3.18
N.Y.S.E. COMPOSITE	252.79	244.55	-8.24	-3.26
NASDAQ COMPOSITE	733.14	693.79	-39.35	-5.37

CLOSING QUOTES FOR GRAPH:

DATE	MICRO TIMES	DOW JONES
12/17/93	4644.25	3751.57
01/07/94	4866.50	3820.77
02/04/94	4728.74	3871.42
03/04/94	5081.75	3832.30
04/05/94	4878.26	3675.41
04/29/94	4639.86	3668.31
05/27/94	4709.29	3757.14
06/24/94	4238.94	3636.94

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Fear and loathing on Wall Street made their presence felt in the high-tech sector when interest rates soared and the dollar plunged during the monthly trading period ended June 24.

Computer stocks, however, were singled out for especial punishment last month above and beyond Wall Street's own problems. The reason: investors feared a seasonal summer slowdown would take its toll on computer companies' profits in the next two quarters. That specter triggered numerous ratings downgrades from Wall Street brokerage firms.

The result: the MicroTimes Stock Index, which monitors the stocks in the accompanying table each month in this magazine, sank like a stone. The box score for our index of 31 stocks: down a resounding 470.34 points, or 9.99%, before pausing to catch its breath at 4238.94. In fact, the MicroTimes Stock Index fared the worst of all the indicators in our market diary section en route to its lowest mark in 1994. One look at the advance/decline comparison for high-tech stocks tells how far and wide the sell-off was in our sector last month, as twenty-eight stocks fell in price vis-a-vis three that rose.

Lotus plunged $27.13 a share, or 44.2%, en route to a close of $34.25. The Cambridge, MA-based company's market value collapsed after it warned that second-quarter earnings would be roughly half of what Wall Street anticipated. The reaction was swift and direct, as shareholders cut the company's stock price nearly in half as a result.

Apple turned sour to the tune of 14.5% to close at $25.61. Last month, the company withdrew from a technology conference, which heightened concern about Apple's third-quarter earnings. Officials at Bear, Stearns & Co., host of the technology conference, said Apple also withdrew from the firm's technology conference in 1993, and soon after reported an unexpected loss of $1.63 a share for the fiscal third quarter ended June 30, down from earnings of $1.07 a year earlier.

Digital Equipment fell 13.1% last month en route to a close of $19.88. The company, whose stock has fallen nearly 40% in 1994 alone, froze wages and salaries across the board last month. DEC has also said it will take another restructuring charge, which some analysts are projecting to be as high as $1 billion. Several companies, including Moody's, are reviewing DEC's debt securities for possible downgrade.

Oracle Systems bucked the downtrend on Wall Street and in the technology sector and rallied $2.50 a share, or 7.3%, to $36.63. Numerous Wall Street analysts sang their praises for the Redwood City, CA-based company and its earnings prospects in the coming quarters. Oracle, not surprisingly, was the largest dollar and percentage gainer of the lot last month. ■

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LOWEST PRICES!

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486 VLB SYSTEM

486DX-33 $839 **486DX2-66 $1029**

- 3 VESA Local Bus Slots
- 256K Cache
- 4MB RAM
- Mini Tower w/200W
- 1.2 & 1.44MB Floppy Drive
- Local Bus SVGA w/16M Colors
- Local Bus IDE Controller
- 2S/1P/1G
- 101 Enhanced Keyboard
- 420MB Hard Drive
- Monitor Not Included

PENTIUM PCI SYSTEM

60MHz $1899 **66MHz $1999**

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- 256K Cache
- 8MB RAM
- Medium Tower w/230W
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- PCI S3 2MB Video
- IDE Controller
- 2S/1P/1G
- 420MB Hard Drive
- 101 Keyboard
- Monitor Not Included

Tape Back-Ups

- Colorado Jumbo 250 Internal **$169**
- Colorado Trakker 250 External **$339**
- Conner 250 Internal 3.5" **$155**

CPU BLOWOUT

Intel

486SX-25	$75
486SX-33	89
486DX-33	225
486DX2-50	249
486DX2-66	279
486DX2-66 (Runs at 80 MHz)	299
486DX4-100	CALL
Pentium 60MHz	CALL
Pentium 66MHz	CALL

AMD

486DX-40	$200
486DX2-50	228
486DX2-66	250

Cyrix

486DX-33	$145
486DX-40	169
486DX2-50	195

Genoa SVGA Controller

- VLB SVGA 1MB **$89**

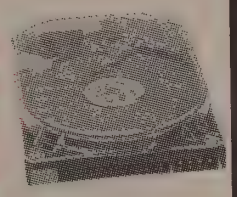
Windows Accelerator Video Card

- 1280x1024
- 1MB
- 16.7 Million Colors **$65**

Conner Hard Drives

420MB $230

540MB $305



MONITORS

NEC

3V, 15" SVGA .28 Green	$465
3FGE, 15" SVGA .28 Digital	589
5FGE, 17" 1280x1024 .28	989
6FGP, 21" 1280x1024 .28	2100

MAG INNOVISION

DX-15F, 15" 1280x1024 .28 LR	$429
DX-17F, 17" 1280x1024 .26 LR	$719

INFINITI

Mono VGA, 14"	$89
Mono TTL, 14"	75
14" SVGA .28 1024x768	209

SCEPTRE

14" .28 1280x1024 Overscan	$275
15" .28 1280x1024 Flat Screen	359
17" .28 Green 1280x1024	$749

ViewSonic

15E, 15" SVGA .28NI	$379
7E, 17" 1280x1024 .28NI	669

EVER VIEW

14" SVGA .39	$179
14" 1024x768 .28NI	240
15" LR 1280x1024	349
17" 1280x1024 .28	749

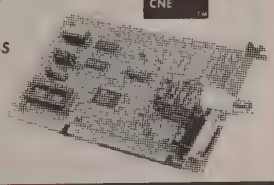
MGC

14" SVGA .28 1024x768NI	$219
15" SVGA VESA .28 1280x1024NI	335

NETWORK CARD 2-In-1

- Twisted Pairs
- BNC
- Jumperless

$33



Double Speed CD ROMS

- Sony 33A
- Panasonic 562
- 320ms
- Controller Included

$139

Toshiba 3401

- Internal
- SCSI

$299

CD Titles on Special

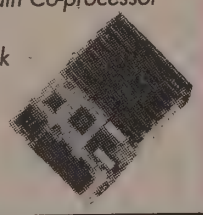
Compton's Interactive Encyclopedia	$40
Mega Race	$24
7th Guest	$19
Star Wars Rebel Assault	$29

And 500 Other Titles Available

486DLC-40 Motherboard

- Includes CPU/Math Co-processor
- 128K Cache
- 129.77 Landmark Performance

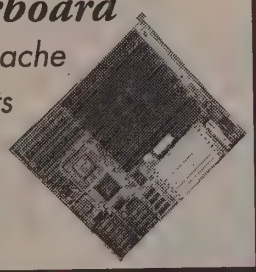
$159



486VLB Motherboard

- 256K Cache
- 3VL Slots

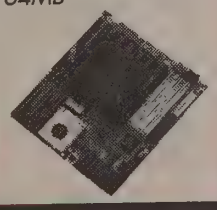
$98



486DX4-100MHz Motherboard

- 256D Cache
- 72 Pin Simm to 64MB
- ZOF Socket
- 3 VLB
- 486DX4, DX2, DX, SX CPU

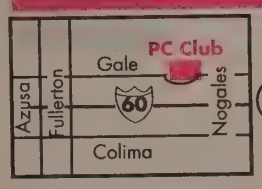
$118



Pentium/PCI Motherboards

- 256K Cache up to 512K Cache
- 72 Pin Simm up to 192MB
- 3 PCI
- 60/66MHz

$369



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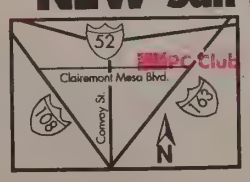

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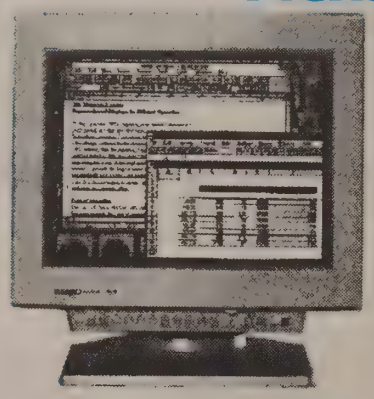
FlexScan F340i•W



- 15", .28mm dpi
- Dark Face, Non-Glare, Anti-Static Electricity
- Picture & Color Control, PowerManager
- 1024 x 768
- 75MHz
- UL, CSA, FCC (B), DHHS, Swedish MPR-II

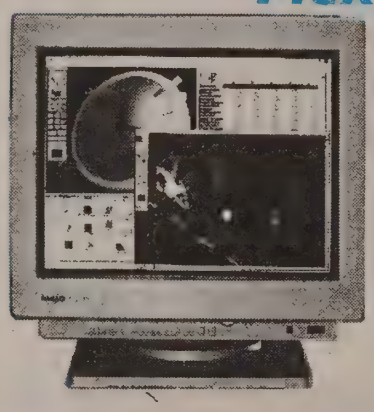
$609

FlexScan 550i•W

- 17", .28mm dpi
- Dark Face, Anti-Static Electricity, Anti-Reflective ErgoCoat™
- Picture & Color Control, PowerManager
- 1024 x 768
- 80MHz
- UL, CSA, FCC (B), DHHS, Swedish MPR-II

$949

FlexScan T560i



- 17", .25mm dpi
- High Contrast, Anti-Static Electricity, Anti-Reflective ErgoPanel™
- Picture & Color Control, PowerManager
- 1280 x 1024
- 130MHz
- UL, CSA, FCC (B), DHHS, Swedish MPR-II, Requirement from TCO 1992

$1475

FlexScan F780i•W

- 21", .26mm dpi, Flat Face
- Dark Face, Anti-Static Electricity, Anti-Reflective ErgoPanel™
- Picture & Color Control, PowerManager
- 1600 x 1200
- 200MHz
- UL, CSA, FCC (A), DHHS, Swedish MPR-II, Requirement from TCO 1992

$2949

Lexmark 4037 5E Laser Printer with Toner 5 PPM

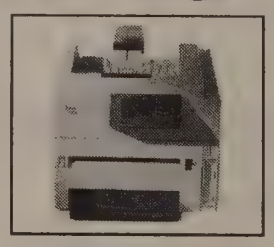
- 1500 x 300 dpi
- Energy Star Compliant
- 512K Expanded to 4.5MB
- LED Imaging
- 150 Pages Input, 75 Pages Output

$685

Lexmark 4039 10R Laser Printer with Toner 10 PPM

- 600 x 600 dpi
- 2MB RAM Exp. to 16MB RAM
- Postscript Level 1, PCL 5
- 200 Sheet Input, 250 Sheet Output
- Energy Star Compliant

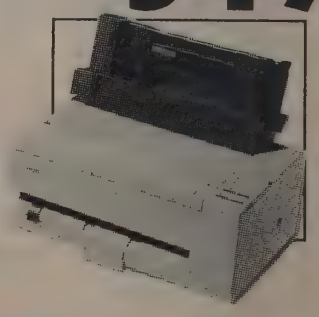
$1345



Lexmark 4076-001 ExecJet II Inkjet

- 300 CPS Draft
- 600 x 300 dpi
- 150 Paper Tray, Auto Cut Sheet

$349



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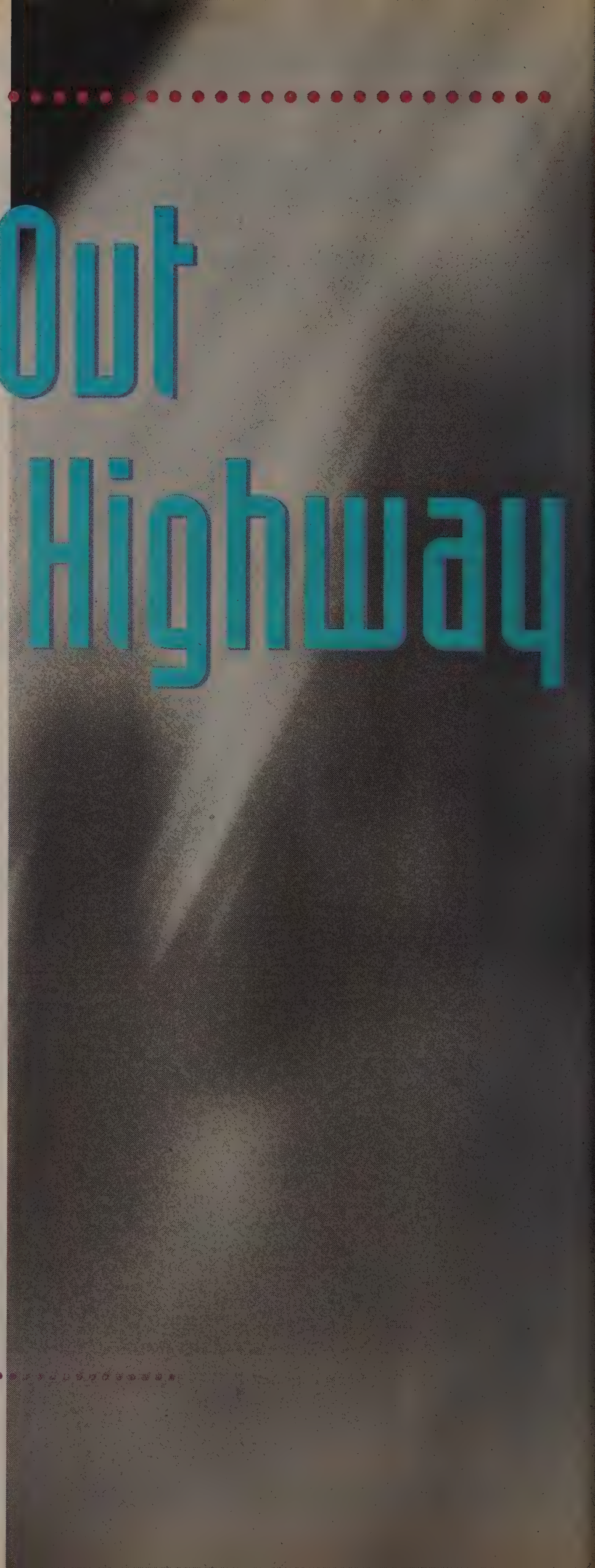
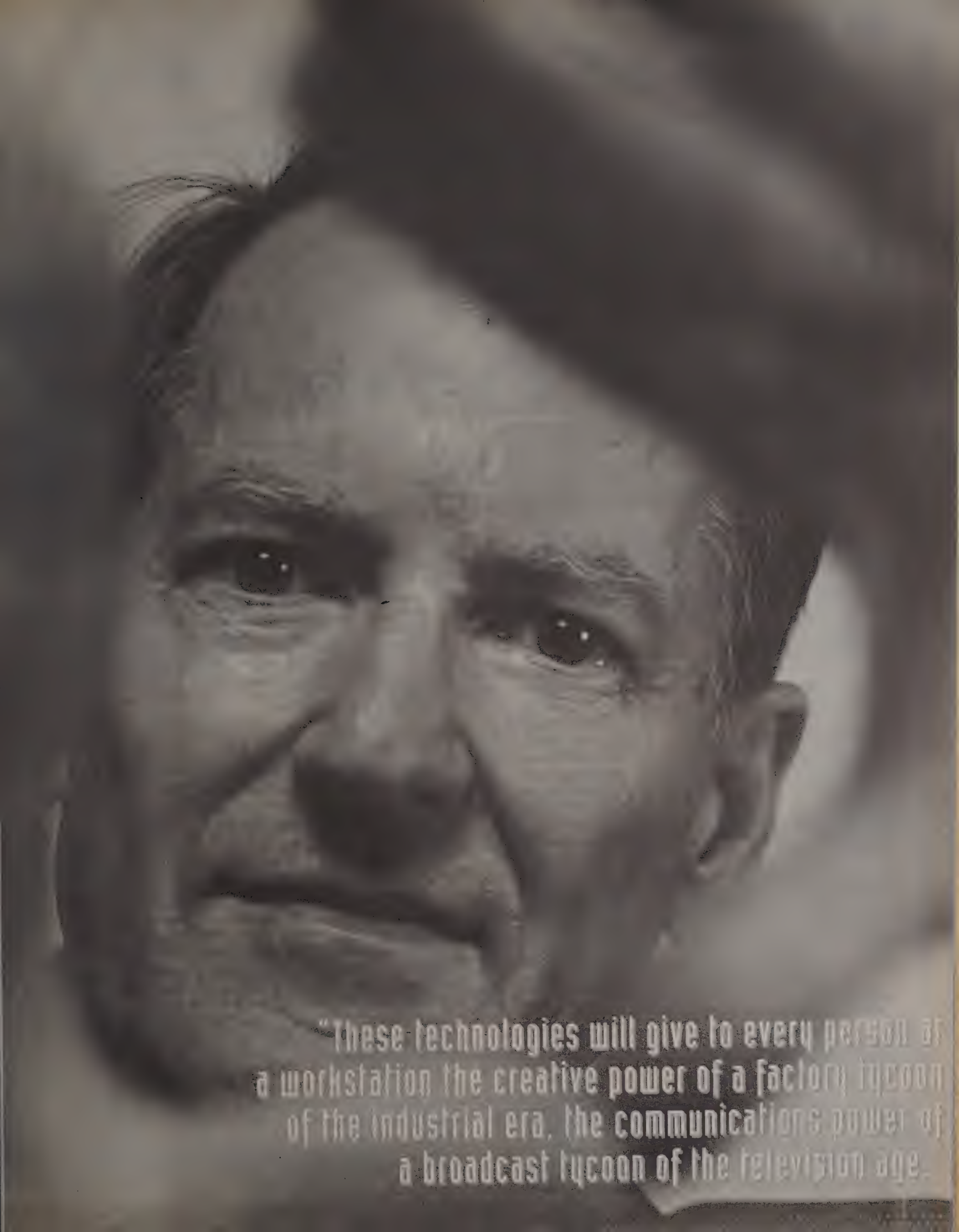
Scoping Out The Data Highway

George Gilder On The Impact Of Emerging Technologies

BY: MARY EISENHART
PHOTOS BY: ANNE KNUDSEN




"These technologies will give to every person at
a workstation the creative power of a factory tycoon
of the industrial era, the communications power of
a broadcast tycoon of the television age.

Data Highway *continued*

Last month, O.J. Simpson, the LAPD, and hordes of competitive media types provided us with a preview of the infinite connectedness, infinite vulnerability, and infinite exploitation that await us all on the information highway. The lines between news, law enforcement, showbiz, and commercial product blurred hopelessly as the entire world stared fixated at a white Bronco between commercial breaks; the market for secure cellular phones was almost certainly given a boost, not only by the fact that the police located Simpson by his phone calls, but that he was no sooner in custody than enterprising cellular phreaks were offering recordings of his phone conversations for sale.

None of this, one suspects, would be a surprise to George Gilder, who's been pondering innovation-driven social change for some time. His first book, *Microcosm*, was a history of the semiconductor industry and its key players. In his recent book *Life After Television* (now out in an expanded paperback edition) and current project *Telecosm* (both a series of articles in *Forbes ASAP* and a forthcoming book due next year from Simon & Shuster), he discusses the changes being wrought in our daily lives by faster, cheaper, more ubiquitous communications. In recent months he's attracted media attention for, among other things, predicting that the personal computer and not the television will inherit the information superhighway, and stating in no uncertain terms that technological innovation works a lot better without government intervention.

You use "microcosm" and "telecosm" quite a lot, and "microcosm," at least, means something quite different from what I learned in Medieval Lit. Could you explain the terms a little?

"Microcosm" is the term I use for the whole domain of quantum physics where microelectronics occurs. How you put scores of transistors on the point of a pin is not a Newtonian achievement. You have to be working with the microstructure of matter itself. You have to really be reaching beyond matter, as the book depicts it. It's the overthrow of matter in order to create these devices.

The law of the microcosm is: You take any number *n* transistors and put them on a single chip, and you get *n*-squared performance and value. Single chips are exponentially improving in comparison to centralized systems.

In the microcosm, as things get smaller, they get faster and cheaper and cooler and better. You interconnect a billion transistors in a single sliver of silicon, as we will in the next few years, and you will get a hugely improved performance at radically reduced price. That's in the microcosm.

Well, if you interconnect a billion of anything in the macrocosm, you get decreasing performance at just huge cost. To interconnect a billion macrocosmic elements would be prohibitively expensive, essentially. It's like the micromodules that were the Air Force's idea for the initial integrated circuits—kind of a Lego block concept, with a transistor in every Lego block, and you could put together any kind of architecture you wanted just by interconnecting the Lego blocks. Of course, by their design, an 8086 would be as tall as the Empire State Building, but apart from that problem, the micromodule was a good idea. But it was a macrocosmic idea. And the integrated circuit brought this technology into the microcosm.

That's the essential law of the microcosm. Even though it's more expensive to interconnect chips; nonetheless you do get another exponential benefit out of it. That's the law of the telecosm: You take any number *n* computers and you interconnect them and you get *n*-squared performance and value. And that's the—it's more costly to do that but you do get this other exponential.

This is really Bob Metcalf's idea. Bob Metcalf was the inventor of Ethernet. This explains the tremendous impact of these computer networks on society because they are governed by this exponential power.

Ray Kurzweil tells a story to dramatize the effect of exponential trends. It's the dramatic way of conveying the impact of these technologies.

The Emperor of China was totally infatuated with this new game of chess that had been invented for him. He was so grateful to the inventor that he came to him and said, "I'll give you anything you want in the kingdom as a tribute for this wonderful game you gave me."

And the inventor said, "Well, I want one grain of rice. I want one grain of rice on the first square of the chess board, which has sixty-four squares, then I want two grains of rice on the second square. Four grains of rice on the third square, eight grains of rice on the fourth square and so on."

In other words, this exponential process.

And the Emperor happily granted this apparently modest request, and everything went fine for the first thirty-two squares. He could produce the several billion grains of rice fairly well on a quarter square mile of rice fields. But after the first thirty-two squares, things began to get interesting.

There are two ways the story ends. One is, the Emperor went bankrupt because after sixty-four squares, this was several billion trillion grains of rice, which would take the entire surface of the earth, plus the oceans times two to produce. The other end of the story was that the inventor lost his head.

But in any case, to get some perspective on how this applies, Kurzweil estimates that by 1993 there had been exactly thirty-two doublings of computer power since the first digital computers were invented in the early 1940s. So we've now completed the first half of the chess board, where things really become interesting and where the Emperor began to take notice of this process.

Indeed some of the emperors of existing technologies, like broadcast television, are beginning to notice the computer, although they still don't imagine it to be such an important piece of equipment as the television set. They actually suppose that just by adding a few cosmetics to the TV set, TV will last for a long time and have a prosperous career with set-top boxes and HDTV systems and pay-per-view or whatever. They say that PCs are all very good, and they're office equipment, or people might use them to do their accounts or whatever, but they aren't really relevant to their imperial business.

You hold a contrary opinion?

I hold a contrary opinion. Because it's after the first thirty-two squares that things become interesting. As we proceed into the second half of the chess board, as Ray puts it, the personal computer is just going to blow away television and all these broadcast technologies associated with it.

So how do you think that's going to happen?

Oh, it's happening right now.

In entrepreneurship you look for your upside surprises. That's your key index of Peter Drucker in his book on entrepreneurship.

I think the big upside surprise in the world economy last year was the production of computers. Early in 1993, both Bill Gates and Andy Grove, the world's leading experts on computer production, essentially, both projected a great year. There'd been thirty-two million PCs sold in 1992, and a lot of people were saying that was an amazing boom produced by a collapse of pricing in some markets, and could not be reproduced in 1993. A lot of people were projecting a decline in PC output in 1993. Instead Grove and Gates both projected around thirty-five million, another great phenomenal year.

Worldwide computer production in 1993 was nearly fifty million, almost 40% greater than most projections. This is a tremendous upside surprise.

It's combined with just runaway growth in networks, the other huge upside surprise. Internet, for example, which for a long time was growing 15% a month, last year grew about 9% a month. Still a tremendous growth, and between 1989 and 1994, over just five years, the proportion of computers connected to networks rose from under 10% to over 60%. It's continued to expand.

Sixty percent of the computers that are being sold today go into homes and

continued on page 82

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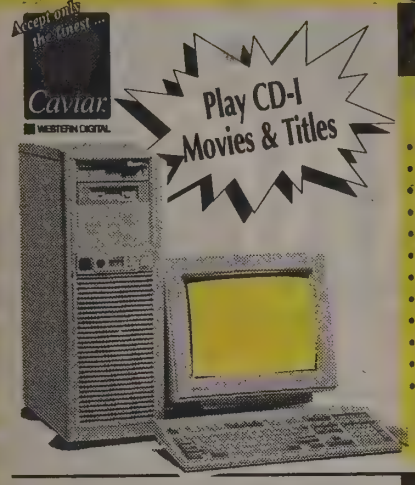

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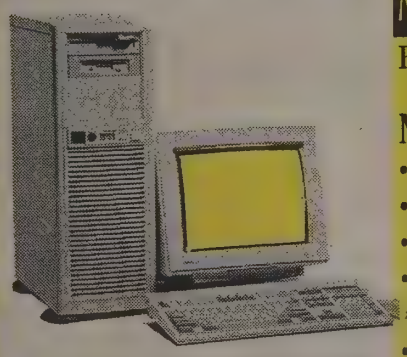

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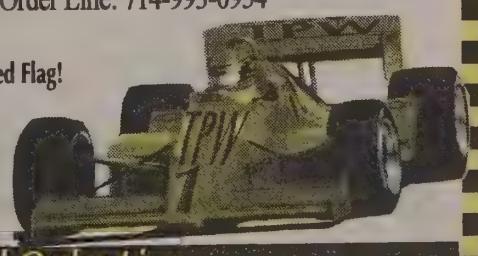

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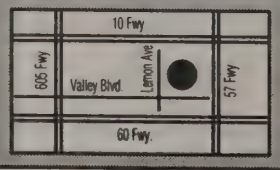

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Data Highway

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home offices, small offices. This growth in homes and home offices is about ten times the rate of growth of TV sales. The idea that's widespread, that the TV is this universal appliance that everybody loves to use, and the computer is this special elite device that only a few people understand and most people fear, is no longer true at all.

All this talk about how computers are impossible and no one wants to use them is just nonsense today. Computers are selling at a tremendous pace; people are becoming addicted to the communications interactivity of computers, and it's an incomparably better market than the TV market. People pay four hundred bucks for a TV and a couple hundred more for a VCR. People pay fifteen hundred bucks for their PC and then spend another fifteen hundred bucks on peripherals and software. They use the TV chiefly to distract themselves and their kids, to reduce themselves to some kind of amnesia or couch potato stupor. They use their computers for communications and career advancement, wealth creation. It's really a major social force, and it's life-enhancing rather than stupefying.

So all the people that are going for interactive television and stuff completely misunderstand the digital revolution and how it's happening. All these people that are trying to do set-top boxes and game attachments for the TV are mostly failing and will probably continue to have very disappointing surprises, downside surprises as opposed to upside surprises.

I like to compare 3DO with Creative Labs. 3DO started with everything going for it. It had all the leading venture capitalists—Kleiner Perkins and Vanguard. It had Matsushita committed to manufacture their boxes. It had superb new graphics chips and technology. It was just a really splendid venture by all conventional measures—and when it was first introduced, I just kept asking, "Well, doesn't it connect to the computer?" "No, this is to connect to the TV." And I said, "Then it's not going to work."

People don't really want to interact that much with the TV. The computer is an interactive device. The TV isn't. And the whole culture surrounding it is different and it's not going to work any more than CDI worked. Here Philips spent hundreds of millions of dollars developing and attempting to sell CDI, and it's still a dubious project.

Most of the sort of TV-oriented interactivity products have been a disappointment, while the computer-oriented ones are just bursting forth in constantly dramatic upside surprises. Creative Labs didn't have any of the advanced technology that 3DO had. It had none of the venture capitalists. It had none of the glamour or hype or publicity or anything. It didn't have the endorsements from gigantic conglomerates. It didn't have the glitz or glamour. It had nothing—but it was targeted on the personal computer and it's now a $300 million business.

I think this is sort of a morality tale at this point. The PC is it and as the PC becomes a teleputer, as I call the connected PCs, they benefit from both these exponential forces, both the law of the microcosm and the law of the telecosm. They are the most powerful factor in the world economy. By following the PC, you can reach the pot of gold, but by following the TV, you just end up stultified like most of your customers.

WELL, GIVEN WHAT YOU STATE IS THE CULTURAL DICHOTOMY BETWEEN WHAT YOU USE THE PC FOR AND WHAT YOU USE THE TV FOR, WHAT DO YOU THINK OF ALL THESE MULTIMEDIA ENTERTAINMENT CD-ROMS——PETER GABRIEL VIDEOS AND MOVIE-BASED GAMES AND STUFF LIKE THAT ON THE COMPUTER RIGHT NOW?

I think they're the first generation. I think the multimedia culture will soon resemble book culture. There are fifty-five thousand trade books published every year, and many more thousands of educational books and textbooks of all descriptions. I think multimedia culture will increasingly resemble book culture as time passes, just as the movement of digital desktop publishing gen-

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erated a huge proliferation of newsletters and magazines and books and documents of all kinds.

The current multimedia pioneers all tend to be struggling, but they are on the bleeding edge. But as these video- and image-based technologies are mastered and become routinized, there's just going to be a huge variety of programming. The CD-ROM will be supplanted with a CD with 2GB or so of capacity, which will mean it can hold a full high-resolution movie on one CD, which I think will be a valuable breakthrough.

As Andy Grove told *ASAP*, by the time the set-top box people get into 30% of the homes where PCs are today and they reach the consumer electronics form factor and price point, the PC will be controlling the TV as a minor peripheral.

So I think that that's the way to think of it—book culture. The key is that in book culture you get your first choice. You walk into Borders or one of these new superstores which are increasingly dominant in the book business, and you get the book you want. In broadcast culture you settle for some lowest-common-denominator product that's been contrived for you by some collaboration between Hollywood and Madison Avenue.

My general feeling is that first-choice culture will always tend to prevail over lowest-common-denominator culture when there's a real opportunity for it. That's what the computer does—it allows the country to escape this stultifying dominance by lowest-common-denominator culture that's targeted toward people's prurient interests and morbid fears and anxieties and ambivalent dread of violence and longing for it. All these sort of "basic instincts," as they say, are necessarily the target of lowest common-denominator media, and I think what the computer allows is the targeting of all career interests, hobbies, intellectual curiosities, special ambitions—the unique and refined interests of people. I think it will be very good for the culture. I think that mass culture has been destructive to the society, and it would be good to have it replaced.

THERE'S BEEN A CERTAIN AMOUNT OF THRASH IN THE LAST FEW YEARS OVER WHOSE MODEL IS GOING TO PREVAIL, THE TELCO MODEL OR THE CABLE MODEL. THE CABLE GUYS ARE VERY ORIENTED TOWARD THE MASS-MARKET, ONE-TO-MANY-AND-NOBODY-TALKS-BACK-TO-YOU MODEL; THE PHONE COMPANY HAS LOTS OF PEOPLE PUTTING LOTS OF STUFF OUT THERE, TALKING TO LOTS OF PEOPLE, A RELATIVELY INTERACTIVE PROCESS. DO YOU THINK THAT THERE IS A TIME AND PLACE FOR EACH, OR THAT ONE WILL PREVAIL?

I think that the open model will prevail because of the law of networks. The more connections, the more valuable all the terminals and the network itself, and so the strategy of controlling both content and conduit and gaining monopoly rents, which is the old cable model, will collapse when you have a broadband world.

Ironically, the creation of a broadband world—it's called an information superhighway—truly does depend on collaboration between cable and phone companies in their own districts, and this is what the current administration wants to prevent at the moment. They fear above all the so-called one-wire model, where you have one wire into a person's home, particularly if it's a cable wire.

But the fact is the one cable link is about seventy-thousand times as capacious as a 4kHz telephone wire, and there just is no way that the telephone industry can duplicate cable's 60% penetration of homes in the United States with broadband connections over the next ten years or more. By combining the fiber-optic capability of the phone companies, which is about nine times as extensive as the fiber-optic deployment of cable companies, with final subscriber loop connections to homes of the cable industry, we can have an information superhighway over the next five years.

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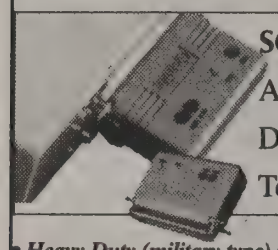

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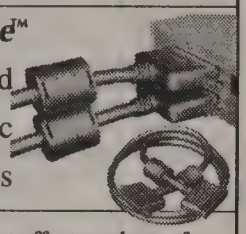

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This is really crucial. I think it's going to happen. I think that cable is going to end up being just vital to the future of the computer industry. Intel, Zenith, and Digital Equipment, among other companies, have all introduced cable modems over the last couple of years; Digital Equipment's modem allows full Ethernet capabilities extended over 70 miles of a cable network. These cable modems will give the online computer services, like America Online and CompuServe and Prodigy and all these networks, real broadband capability. When these online networks can transmit images and video and films and files of all kinds, it will be the beginning of the end for the television industry.

I honestly believe that within five years or so the cable companies are going to be making more money off computers than they are today off television programming. In fact, the cable network is going to become a computer network.

The key point is that cable PC will become as important as cable TV is today. The reason people underestimate computers today is because their bandwidth is so limited because of the phone lines. When they suddenly can transmit megabits a second, the whole nature of the medium will be transformed. I think it will be the path by which the PC industry will fulfill its manifest destiny of blowing away the television industry in this decade.

So where does wireless fit into all this?

Wireless is vital for anything that's mobile. Human beings are mobile so they need a lot of wireless connections. Wireless connections are going to be very important—indeed, wireless bandwidth is increasing as fast as fiber bandwidth and fiber bandwidth is doubling every year or so. You have this tremendous expansion of fiber bandwidth from a much higher level, but you have a similar expansion of wireless bandwidth.

There have been major innovations in the last couple of years introduced on the wireless side. One of the key inventions is CDMA, code division multiple access technology from Qualcomm, which allows you to have 100% frequency reuse. You can use all the frequencies in every cell, and as you reduce the cells to smaller and smaller sizes, you can multiply bandwidth to an almost unlimited extent. CDMA is almost crucial, I think, for very small cells.

Time Warner and Qualcomm have just introduced a CDMA service operating over cable in Orlando.

This is the Silicon Graphics thing?

No, no. Silicon Graphics is the set-top box in Orlando. This is using that same cable bandwidth for back haul, but using CDMA wireless to give personal communication services, PCS phones, lightweight, low-power phones, portable, wireless phones, to Orlando.

Beyond that there's also technology developed by Steinbrecher Corporation in Burlington, Massachusetts—a box that's essentially a broad-band digital radio. The usual cellular base station includes 416 radios, one for each channel, and it's hard-wired for one modulation scheme, whether it's time division multiple access or amps or TDMA or CDMA or some digital packet data scheme like CDPD—there are all these various modulation schemes and protocols used for wireless traffic, and specific frequencies used. Essentially, existing cellular technology requires a separate radio for each frequency, and a channel and application-specific equipment for every modulation scheme and protocol used in the system.

The Steinbrecher is a digital radio which replaces all this hard-wired, analog electronics with one broad-band radio. This radio can essentially take all the contents of the cellular band, all the signals being transmitted in the cellular band, reduce them to base-band signal, convert the base-band signal to the analog signal to a digital bitstream and then, in the digital realm, employ digital signal processors to sort out all the different calls and channels and modulation schemes and protocols in that entire cellular band. You replace 416 radios and all the associated apparatus with one box the size of a briefcase that

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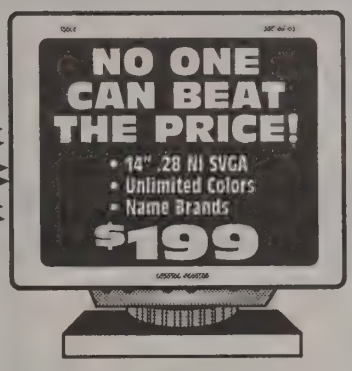

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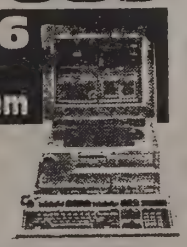

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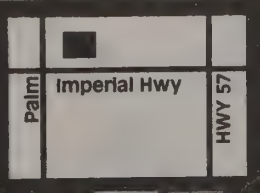

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can outperform all of the entire process.

This technology is in the process of being introduced by McCaw as part of its CDPD project—cellular digital packet data for computer connections over the cellular network.

But the real importance of this technology will be as it's launched as a mini-cell, and that will happen over the next year. That will really change wireless drastically.

In what way, practically speaking?

Well, you get to have a base station on every telephone pole and up every elevator shaft and eventually in every household, for a reasonable price. And that base station won't be tied to one modulation scheme. You won't need hybrid technologies. It will be able to handle any kind of communications—whatever you throw at it. You have to program it for each one you throw at it, but it is programmable. It's a programmable digital device. As this technology is introduced and becomes pervasive, it joins with these other technologies to make bandwidth as available in the wireless domain for mobile applications as it is now in wire-line domain.

Then beyond that, the Teledesic program will come on toward the end of the decade. This is Bill Gates's and Craig McCaw's project which will bring broadband digital communications to all the many parts of the world which have none. Most of the world, half the world, has almost no telecommunications at all. Even though the spread of fiber optics and various cellular wireless technologies will make tremendously rich communications ubiquitous in urban and suburban areas, this Teledesic project has enormous promise to extend it all over the world. It's a low earth-orbit satellite concept like Iridium, but unlike Iridium it's not focused on extending telephony—voice communications. It's for broadband digital communications, digital computer links, up to 1Gbit a second.

Is the idea that this should be accessible to everybody regardless of where they are?

That's right.

So from a user's standpoint, what would you need to access this when it's developed?

You need a computer terminal and a little antenna. The antenna doesn't need to be more than 1" tall because it's in the 28GHz KA band of the spectrum. So you can have very small antennas and relatively low power. You can have extremely low bit error rates for digital data communications. You can also have voice, you can have connections, anything from 16kbits to 1.2Gbits. It's bandwidth on demand.

There will be a combination. Wireless will be very important and increasingly valuable. For voice communications, I think wireless will completely dominate. Virtually all phones will be wireless as the digital revolution proceeds; I think the key to succeeding in that world will be understanding that bandwidth is abundant, and you use bandwidth to enhance quality so that your voice quality and data transmission facilities are superior to current wire line voice and data communications.

Those are the companies that are going to win. The companies that try to economize on bandwidth, assuming that bandwidth is scarce, and use half-rate vocoders and systems like that to use less bandwidth, are going to fail because the ubiquitous phones will have better acoustics than existing phones. That's what really will ignite their success, where you preferentially choose your portable device against your wire line device because it's better acoustics as well as more mobile.

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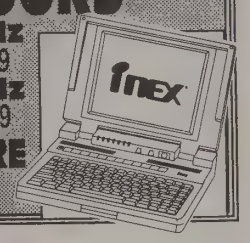

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So you have this picture of an infinitely interconnected world across which people are moving gigabits and gigabits of stuff, uploading it, downloading it, buying and selling it. How does this work? Who's paying for it, who's buying what, where are the subsidies, where are the hidden costs? Is the model going to change from the one where now you go to Blockbuster and you rent a movie, or you go to the bookstore and you buy a book?

I think that more and more of the economy will flow through this net. As people move up the Maslow ladder or whatever—your basic physical needs for food, shelter, housing, transportation, or whatever—increasingly our needs are intellectual and spiritual, informational and educational. And so more and more of the economy will flow through these systems.

So very low-cost media will yield big rewards for the people who supply them. In other words, just as the cost of MIPS and bits dropped ten thousand-fold over the last decade or so, it didn't demolish the market for computers. The market for computers exploded. So the collapse in the price of bandwidth that is predictable over the next decade will not destroy the business of the bandwidth suppliers. It will make their business the central nervous system of the world economy.

The first point is that it will pay to supply this bandwidth. It's going to be a good business, not a bad business. As things drop in price, they generate more profits, even at lower margins. This is the secret of enterprise in this era—if you're losing money on every unit sold, you can indeed triumph by selling more units.

The watermelon thing.

What's the watermelon thing?

The joke about the two guys who went into business selling watermelons. They'd buy watermelons for $1 and drive them to town and they'd sell them for $1 and things would go along and they would sell lots and lots of watermelons. Every day they'd sell out their little pickup truck but they wouldn't make any money, and so they were conferring as to what they had done wrong and they concluded they needed a bigger truck.

[*laughter*] Well, that's just right. They do need a bigger truck. If you are losing money at a high price, the way you make money is to reduce the price. And that's the principle.

In any case, what will happen is that a lot of the costs which are now associated with distribution will be eliminated. This is whether you're talking about movies, where 70% of the current costs derive from distribution and advertis-

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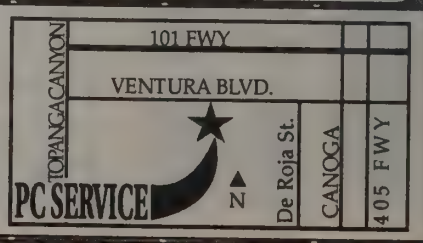

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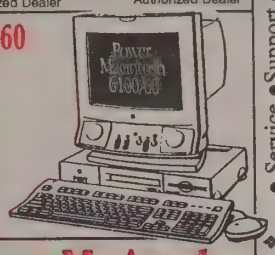

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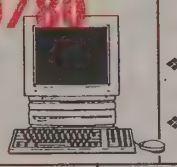

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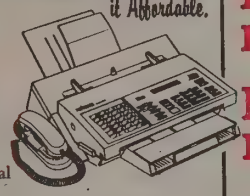

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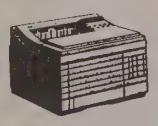

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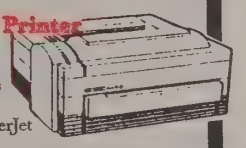

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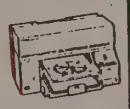


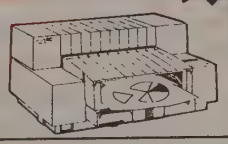
- LaserJet Compatible for Convenient Document Portability
- Easy Set-Up w/ built-in Support for Windows & PC Applications.

Big Budget Looks, Small Budget Price

HP DeskJet 500C $358

HP Deskwriter 500C $358

IN STOCK

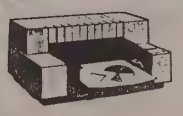


- Laser-Quality Printing at a Dot Matrix Price for Affordability.

Price Breakthrough on the HP DeskJet 500C Printer!

HP DeskJet 560C Inkjet Printer
$548

HP DeskWriter 560C Inkjet Printer
$548

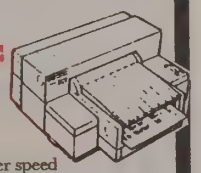


- 600x300 dpi. Black & Color Printer, 35 Scaleable True Type Fonts

FCS Presents Mac Users with the black & white printer with a colorful side.

HP DeskJet 550C $478

HP DeskWriter 550C $478

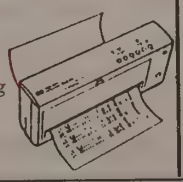


- 300dpi, laser-quality black & white printing
- 35 scaleable fonts
- Integrated spooling for faster speed
- Postscript Option Available

FCS Presents the HP DeskJet Portable Printer for People on the Go.

HP DeskJet 310 $298

HP DeskWriter 310 $298



- 300dpi, Laser-Quality Printing
- Up to 3ppm, 100 pages per single charge
- Weight just 4.4lbs. Color Option add $38

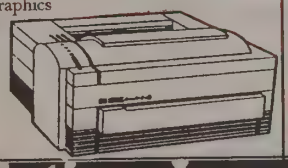
HP LaserJet 4Si Printer
HP LaserJet 4Si MX Printer

- True 600x600 dpi printing w/ REt & microfine toner
- HP JetAdmin allows easy remote operation Novell NetWare

IN STOCK

HP LaserJet 4P Printer $948

HP LaserJet 4MP Printer $1298

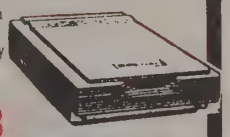


- 600 dpi Text and Graphics
- 4 pages per minute

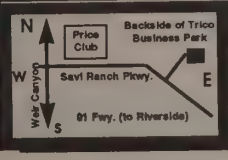
FCS Introduces a New Revolution in Scanning

HP ScanJet IIcx Scanner IBM/MAC $898

- Ideal for both Monochrome & Color graphics & text
- 400dpi high quality resolution
- Enhanced OCR Accuracy w/HP Accu-Page Technology



HP ScanJet IIp Scanner $498



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ing; or you're talking about newspapers, where over 50% of the costs come from printing and distribution; or whether you're talking about selling computers, where today a lot of the costs come from distribution and warehousing and advertising and whatever. The network will allow you to eliminate most of these costs, these middle costs. This girth of fat in which most economic production is enclosed today will melt away into the new media and the new communications.

So what happens to all the things that are in that spare tire, like the ads that finance the distribution——

Well, ads become much more effective. Current ads are just incredibly inefficient. Broadcast ads, for example, support less and less real programming as time passes. You need more and more ads for less and less substance. Broadcast advertising focuses on capturing people's eyeballs for a few seconds and minutes, with no guarantee or even clear means to a sale in most cases. So what we think of as advertising is mostly a tremendously inefficient broadcast commercializing, and it will be blown away by new transaction-oriented commercial processes on the net.

How might that work?

Well, say you receive your newspaper on a flat panel, a news panel. It's about the size of a clipboard. And you get the front page of the newspaper on it. You click to a story on the new Apple Power PCs that are being launched, Power Macs. The story comes up and fills the screen, which now has high resolution and is as readable as paper, and there's an icon at the bottom or whatever for you to click to buy one of these devices if you want. The first icon is to see an advertisement which fills up the screen if you choose to see it, then provides further opportunities to see textual descriptions of the product and its specifications. Then other ways to see places where this device is available, or ways it can be delivered to you if you want to purchase it, and different price points and different configurations.

In the end it takes you step-by-step through to a transaction, and that process is just incomparably more efficient than the current system where they have an ad for a Mac with maybe an address but no real sense that anybody is actually purchasing anything.

Image advertising.

It's image advertising, that's right. It really is.

So I think advertising will be much more effective, but it will have to change a lot. You won't be able to trick people into watching your ad. You'll have to choose advertising copy or whatever that people deliberately choose to read.

Kind of what the catalog guys are doing now.

Yeah, what the catalog guys are trying to do.

So I think this new technology will radically change the entire advertising business. All this constant bombardment by irrelevant and distracting and mostly ineffectual images will expire; advertising will be much more effectively targeted, and people will get it when they want it.

So it will essentially be pull rather than push.

That's right.

Meanwhile, there will be some events that everybody will want to see, certain kinds of national events, Super Bowls or whatever, which lots of people will watch in common. There probably still will be some advertising associated with it.

But in general the idea of mass advertising will collapse just as all mass media become much less effective and pervasive. The lowest-common-denominator appeals will become less and less useful.

One of the ongoing issues in magazine publication is the advertising-editorial dichotomy——how much the advertisers steer the course of the editorial, and who can you trust, and stuff like that. Do you see the line between advertising and editorial blurring? Do you see it being sort of a big soup of information, and you'll pull out what makes sense to you, regardless of source?

I think editors will be very important. I think that this idea that somehow all writers will just set out independently without editors, put their material in encrypted form on the net, and expect people to pay to decrypt it, is just unrealistic and naive. I think there will be need for all kinds of publications, and they will be dominated by editors who earn the trust of the readers. I don't think that will change.

As information becomes more and more accessible and ubiquitous it will be more and more baffling in its mass and variety; there will be more and more need for people to sort it out and perform these filtering functions. So I think publications will still be significant.

But that doesn't answer your question about the difference between advertising copy and the sort of editorial substance of the magazine. My favorite journal, what I read most faithfully and regularly, is *EE Times*. A lot of the copy in *EE Times* is written by people in the various computer and communications companies, actually describing products and technologies which they also are selling. But in doing this they have to write it in a way that is not baldly self-serving. They have to actually explain the technology and mention that there are competitors producing it and make some sort of honest effort to describe some of the competitive products. These are really written infomercials in a sense.

I think there will be a lot of those, but they are chosen by the editors. A lot of these articles are better than the articles that reporters might write who had much less time to explore and really master the technologies at hand. So they don't reduce the value of *EE Times*. They enhance the value of *EE Times*. You gladly read them and pay for them.

So I don't think they corrupt the magazine. I think they're a legitimate part of the magazine. There is this kind of convergence. But it doesn't mean that you don't also have columns by independent writers and editorials and reports that are different, and the reader is capable of differentiating between the different kinds of material presented to him.

At the MIT Media Lab, they had a discussion a couple of months ago where one analyst was projecting that advertisers would begin making deals with the reader: If you click onto my ad, we'll give you some Green Stamps or some AAdvantage miles or whatever. The implication is that the old model of advertising persists, that advertising is somehow value subtractive.

It's the value subtractive model of advertising which currently dominates. And I think that's the wrong way to look at it. Advertising has to be value-added in a broadband world. If you had to think of buying an issue of *MicroTimes* or *PC Magazine* or *ASAP* for that matter, with advertising or without, you'd choose the one with the advertising. The advertising contributes to the value rendered. You would actually, in all likelihood, be willing to pay substantially more for the edition with the ads.

This implies that they are adds rather than minuses. I think that broadcast advertising mostly consists of minuses, and what we're going to have is real

continued on page 99

COMPAQ

COMPAQ 486SL 25MHz

CONTURA AERO 4/25 84MB SUPER LIGHT NOTEBOOK

486SL 25MHz CPU • 84MB Hard Drive • 4MB RAM expandable to 12MB Model does not include an integrated 3.5" 1.44 MB diskette drive • EasyPoint Trackball • 76-Key Keyboard • Integrated speaker MS-DOS 6 • Microsoft Windows • WinLink Transfer Utility with cable Lotus Organizer TabWorks • Online Documentation • 3 Year Limited Warranty

$996.95

#1890684

COMPAQ 486SX 33MHz

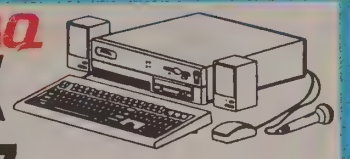
PRESARIO 633 200MB SYSTEM

486SX-33MHz CPU • 200MB Hard Drive • 4MB RAM expandable to 32MB • Dual Floppy Drive • Local BUS SVGA • 3 ISA expansion slots • 3 drive bays • Internal fax/modem • **Preinstalled software**: MS DOS • MS Windows 3.1 COMPAC Mouse • PFS: WindowWorks 2.0 • Delrina WinFax Lite • Prodigy • America On-Line • Symantec Games Pack Monitor Sold Seperately

$999

#1866913

COMPAQ 486SX 33MHz



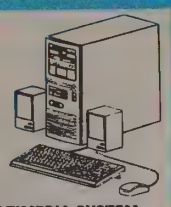
PRESARIO 633 CDS 200MB MULTIMEDIA SYSTEM

486SX-33MHz CPU • 200MB Hard Drive • 4MB RAM expandable to 32MB 3.5" 1.44MB Floppy Drive • CD-ROM drive (dual-Speed) • SoundBlaster 16 Audio Board • External speakers and microphone • Local BUS video graphics • 2 ISA expansion slots • 3 drive bays • Internal fax/modem Mouse • **Preinstalled software:** MS DOS • MS Windows 3.1 • TabWorks Microsoft Works • CD-ROM titles •Prodigy • America On-Line Microsoft Entertainment Pack • Symantec Games Pack • Delrina WinFax Lite **Monitor Not included.**

$1299

#1866924

COMPAQ 486SX2 66MHz



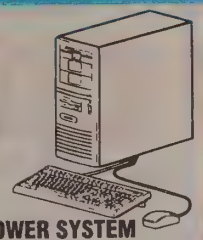
PRESARIO 860 W/CD ROM 340MB MINI MULTIMEDIA SYSTEM

486SX2-66MHz CPU • 340MB Hard Drive • 8MB RAM expandable to 56MB • CD ROM drive (Dual-Speed) • External Speakers and Microphone • 5 ISA expansion slots • 5 drive bays • Supports Intel OverDrive processor(486DX2/66), as well as future OverDrive processor with Pentium technology **Preinstalled software:** MS DOS • TabWorks • MS Windows 3.1 • Microsoft Works • CD ROM titles • Quicken for Windows 2.0 • Delrina WinFax Lite • Prodigy • America On-Line • Microsoft Entertainment Pack • Mayo Clinic Health • Encarta • **Monitor Not Included**

$1999

#1910315

COMPAQ 486DX2 66MHz



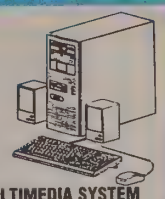
PRESARIO 866 340MB MINI TOWER SYSTEM

486DX2-66MHz CPU • 340MB Hard Drive • 4MB RAM expandable to 56MB • Dual Floppy DriveLocal BUS video graphics • 5 ISA expansion slots • Mouse • 5 drive bays • Internal fax/modem Supports Intel OverDrive processor with Pentium technology • **Preinstalled software**: MS DOS • TabWorks MS Windows Workgroups Microsoft Works Delrina WinFax Lite Prodigy • America On-Line Microsoft Entertianment Pack Symantec Games Pack • **Monitor not included**

$1899

#1866968

COMPAQ 486DX2 50MHz



PRESARIO 850 W/CD ROM 340MB MINI MULTIMEDIA SYSTEM

486DX2-50MHz CPU • 340MB Hard Drive • 4MB RAM expandable to 56MB • Dual Floppy Drive • CD ROM drive (Dual-Speed) • SoundBlaster 16 Audio Board • External Speakers and Microphone • Local BUS video graphics • 4 ISA expansion slots • 5 drive bays • Intergrated fax/modem • Supports Intel OverDrive processor(486DX2/66), as well as future OverDrive processor with Pentium technology • **Preinstalled software:** MS DOS • TabWorks • MS Windows 3.1 • COMPAC Mouse • Microsoft Works • CD ROM titles • Quicken for Windows 2.0 • Delrina WinFax Lite • Prodigy • America On-Line • Microsoft Entertainment Pack • Symantec Games Pack • **Monitor Not Included**

$1699

#1866957

COMPAQ 486SL 25MHz

CONTURA AERO 4/25 170MB SUPER LIGHT NOTEBOOK

486SL 25MHz CPU • 170MB Hard Drive • 4MB RAM expandable to 12MB Model does not include an integrated 3.5" 1.44 MB diskette drive EasyPoint Trackball 76-Key Keyboard • Integrated speaker • MS-DOS 6 Microsoft Windows • WinLink Transfer Utility with cable • Lotus Organizer TabWorks • Online Documentation 3 Year Limited Warranty

$1499

#1890695

COMPAQ 486SX 33MHz

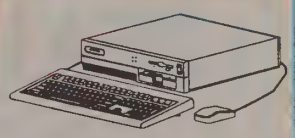
CONTURA AERO 4/33C-170 170MB COLOR SUPER LIGHT NOTEBOOK

486SX-33MHz CPU • 170MB Hard Drive • 4MB RAM Expandable To 12MB • Passive Color • Model Does Not Include An Integrated • 3.5" 1.44 MB Disk Drive EasyPoint Trackball • 76-Key Keyboard • Integrated Speaker MS-DOS 6 • Microsoft Windows • WinLink Transfer Utility With Cable Lotus Organizer • TabWorks • Online Documentation

$2099

#1902565

COMPAQ 486SX2 66MHz



PRESARIO 660 340MB SYSTEM

486SX2-66MHz CPU • 340MB Hard Drive • 4MB RAM expandable to 32MB • Dual Floppy Drive • Local BUS SVGA • 3 ISA expansion slots • 3 drive bays • Internal fax/modem • **Preinstalled software:** MS DOS • MS Windows 3.1 • PFS: WindowWorks 2.0 • TabWorks • Delrina WinFax Lite • Prodigy • America On-Line • MS Entertainment Pack **Monitor Sold Seperately**

$1399

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Prices Good Through August 2, 1994

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STORE HOURS

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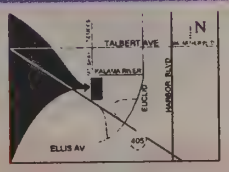
SATURDAY
9AM - 8PM
SUNDAY
9AM - 7PM



Fountain Valley
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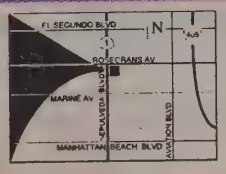
(714) 378-4400
CORP. P.O. FAX (714) 378-4444



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3600 Sepulveda Blvd.
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CORP. P.O. FAX (310) 364-3700

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486DX2-66MHz MOTHERBOARD

486DX2-66MHz ISA
ØK Expandable to 32MB RAM
ØK Expandable to 256K Cache
CPU sold separately
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$69.95

486 MOTHERBOARD VESA LOCAL BUS

2 Vesa Local Bus Slots
Zif Socket
ØK Cache Expandable to 256K
Power Management • UMC
No CPU #1915893

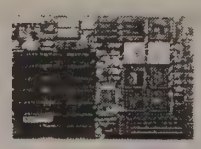
$79.95

486VLB-DX2 66MHz MOTHERBOARD VESA LOCAL BUS KIT

486 VLB, 256K Cache,
2 VESA Local Bus Slots,
Ali Chipset, No CPU
#1856323

$129

486 GREEN VLB MOTHERBOARD



256K Cache • Energy Saver/Management
Works w/Green Power Supply
256K C
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LEADING EDGE 486DX-33MHz 260MB SVGA SYSTEM

80486DX-33MHz CPU/Motherboard
4MB RAM Expandable To 32MB
260MB Hard Drive • 5.25"1.2MB/3.5"
1.44MB Dual Floppy Drive
2 Serial/1Parallel • Monitor Not Included
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* After $75 mail-in rebate. In-store price $1174.

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LEADING EDGE 486DX2-66MHz 260MB SVGA SYSTEM

80486DX2-66MHz CPU/Motherboard
4MB RAM Expandable To 32MB
260MB Hard Drive • 5.25"1.2MB/3.5" 1.44MB
Dual Floppy Drive • MS DOS • MS Windows
2 Serial/1Parallel • Case/Power Supply
Monitor Not Included #1921733

* After $100 mail-in rebate. In-store price $1399.

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IBM PS/1 with Rapid Resume. 2155-87C Multi-Media System 486DX2-50MHz

Intel 486DX2 50MHz CPU • 420MB Hard Drive • 4MB Memory Expandable to 64MB • 3.5" 1.44MB & 5.25" 1.22MB Floppy Drives • Local Bus SVGA • IBM Mouse • IBM Keyboard • Internal FAX/Modem • 5 AT Slots **Pre-loaded Software:** MS DOS • Microsoft Windows • Microsoft Works for Windows • PRODIGY • P/S1 Tutorial, Index • Fitness, • Virus check• PS/1 Edition American On-line IBM **Quality & Reliability:** The PS/1 Expert is built to IBM's exacting standards for quality & reliability. Support and Service: The exclusive on-line PS/1 Club™ answers your computing questions, 24 hours a day, 365 days a year.
Monitor Sold Separately.
Model 2155-87C #1902624

IBM

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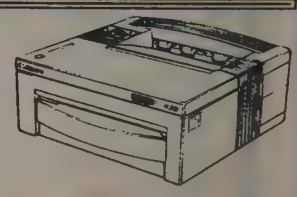
MINI TOWER COMPUTER CASE WITH POWER SUPPLY

#1742428

$48.95

Canon LBP-430 LASER PRINTER



- 300 dpi and Super Fine Toner for Superior Print Quality
- 4 ppm Print Speed • PCL5 Compatible
- 100 Sheet Universal Paper Tray Handles Several Paper Sizes
- 1MB Memory, Upgradeable to 5MB
- Two Year Limited Warranty #1832460

* After $30 mail-in rebate. In-store price $599.

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CITIZEN GSX-220 24-WIRE DOT MATRIX PRINTER

- 360 DPI • 240 CPS
- Bi-directional
- Auto sheet feeder holds 50 sheets
- 24 pin narrow dot matrix
- Scalable Fonts
- Color option sold separately

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Charlie Chip Says:
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FRY'S ELECTRONICS

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MEMOREX COMPUTER SUPPLIES

3.5" DS/HD HIGH-DENSITY IBM FORMATTED DISKETTES

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$4.99*

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MEMOREX COMPUTER SUPPLIES

3.5" DS/HD HIGH-DENSITY MAC FORMATTED DISKETTES

10 PACK #1904279

$4.99*

*After $2 mail-in rebate. In-store price $6.99.

1024 X 768 14" .28mm NON-INTERLACED SVGA MONITOR

1024 X 768 • .28 Dot Pitch • Non-Interlaced
One Year Warranty
#1674196

$249

1024 X 768 16-BIT SUPER VGA CARD

Super VGA 1024 X 768
256K Expandable To 512K RAM
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15" LARGE SREEN SVGA MONITOR

1024 X 768
.28mm DOT PITCH
NON-INTERLACED
15" LARGE SCREEN
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CALYPSO AUDIO MAGICIAN PLUS SOUND CARD
16-BIT PERFORMANCE AT AN 8-BIT PRICE
SOUND BLASTER & AD-LIB COMPATIBLE

Microphone Jack • Game Port • Audio Recorder Audio Reminder • Talking Clock • Talking Calculator • Audio Clip Library Timer and Stopwatch #1811784

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first MOUSE

First Mouse is an excellent 3-button mouse value. It's easy to install and use, with a comfortable sleek shape and large tactile buttons. True ergonomics combine a comfortable shape and software that reduces repetitive double clicking to a single click of a mouse button. First Mouse is built with uncompromising quality for a long life.
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LOGITECH **$29.99**

EP6S METAL SURGE

EP6S 210 JOULE
6 OUTLET SURGE PROTECTOR
EMI/RFI NOISE REJECTION
5 YEAR WARRANTY $250 CNCT EQP
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WABER, INC.

$12.99

3.5" EXTERNAL SCSI CASE ENCLOSURE

For SCSI Hard Drive, Tape, and CD-ROM KS-410+P #1790432

$79.95

386SX-40MHz MOTHERBOARD

386SX 40MHz
MOTHERBOARD
ØK EXPANDABLE
TO 16MB
#1757943

$69.95

***POWERCELL 250* 250 VOLT/AMP BACK-UP POWER SUPPLY**

UNINTERRUPTABLE POWER SUPPLY

- 480 Joule Surge Protection Built In • 2 Outlet
- Modified Sine Wave Output #1851362

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PROTECT YOUR INVESTMENT!
BYTE BROTHERS COMPUTER LOCK

Includes:
- Security Fasteners of all metal construction, designed for easy installation.
- Generous 7' cable made of flexible 3/16" steel, coated with putty colored vinyl.
- Heavy-Duty padlock. #1889901

$39.95

PCMCIA 170MB* MiniStor HARD DRIVE WITH COMPRESSION FOR PCMCIA NOTEBOOKS

For notebook users there's no better way to pump up your PCMCIA storage in seconds with the quality and portability you need. *The MiniStor 170MB Hard Drive after compression using Stacker software(included).
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$299

While supply lasts.

3M 4mm/90M DATA TAPE

- 2 Gigabyte • 90 meters long
- Helical-scan data • Grade certified

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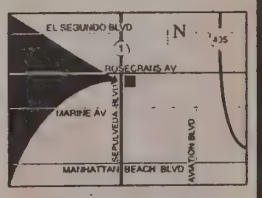

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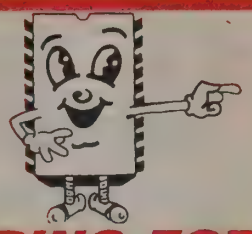

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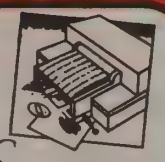

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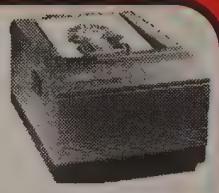

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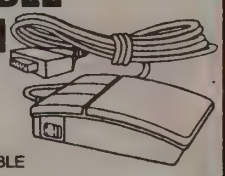

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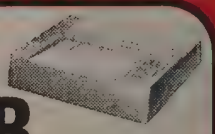

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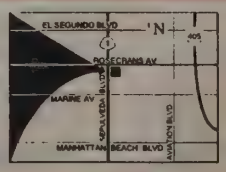

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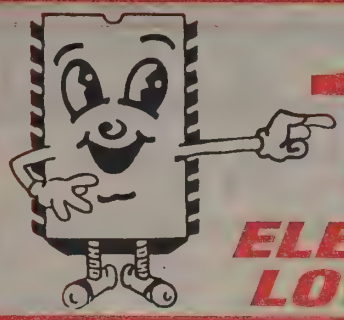

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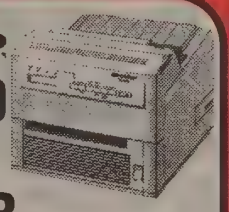

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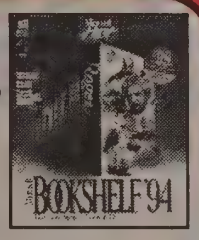

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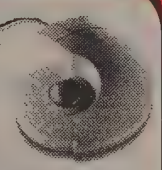

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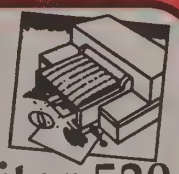

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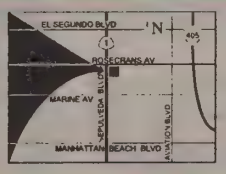

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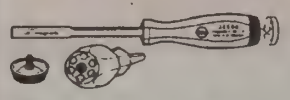

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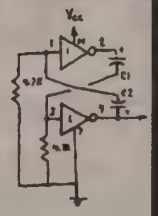

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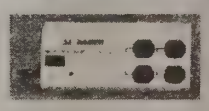

SL Waber's new "Wave Tracker" provides the ultimate in noise filtration and surge protection.

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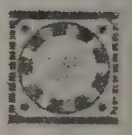

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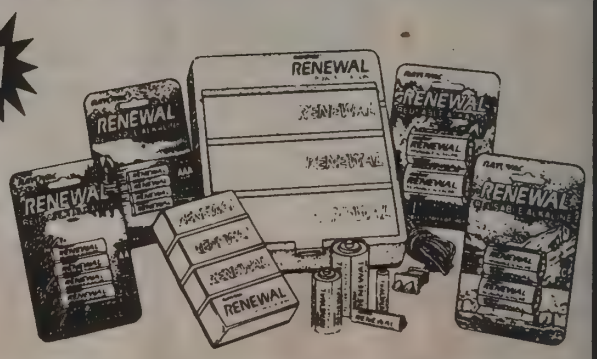

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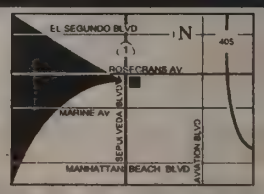

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 continued from page 92

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Ever since I first started hanging out online, people have been saying, "We'd really love it if all the MicroTimes ads were available in digital form for us to shop through. That way we could call up all the people that are offering 486s and just price-compare them and go off and buy from the cheapest one." Which of course is undesirable from some advertisers' standpoint, because the PC universe is just coming out of this price war where everybody was undercutting each other to a suicidal point.

Suicidal price wars have their natural terminus. [*laughs*]

Yes. The PC Tontine...

They're going to have to deal with that.

You're giving the reader more control over the ad.

That's right. But if the vendor really doesn't offer any added value beyond delivering the lowest price, they shouldn't be in business and won't be, and so there will be other ways to differentiate your product than merely hoping that the reader doesn't have access to full knowledge of available prices.

There are a lot of little anomalies as you move through this transitional era, but I think the direction is pretty clear.

Do you think that readers are going to get smarter as a result of this in terms of filtering information for themselves, or are they just going to be even more dependent than they are now on unseen filters back at CBS? I find right now that audiences are extremely naive about the source of the information that they just gobble. I wonder if you see that changing.

Yes, I do. Unseen filters back at CBS will have greatly reduced power. The editors who actually have them in mind and understand them will be able to deliver information to them, but there will be no advantage in being CBS. Controlling a conduit will not impart any power over content to the vendors of information. In other words, all content providers will be created equal, and that will mean that providers of the content that's really relevant to some person will win that business.

One of the hot subjects of debate on the information superhighway is that a lot of people envision the rich getting richer, the poor getting poorer, and the gap widening between the people who have access to the technology and the people who don't. Do you think that is what will happen?

No. This technology is supremely cheap and supremely distributed, and what it does is greatly enhance the power of individuals. Because it will be ubiquitously available, it will actually reduce a lot of the gaps, the sort of artificial divisions that currently leave some communities as backwaters and make others rich with cultural features and opportunities.

These technologies will give to every person at a workstation the creative power of a factory tycoon of the industrial era, the communications power of a broadcast tycoon of the television age.

The biggest benefits will come to previously bypassed communities in the boondocks or ghetto communities in the inner cities. Now in order to get a good school, you've got to live in a rich community, but with broad-band information seas or whatever, you'll be able to get the best education regardless of where you are. I think the benefits to poor people will be substantially greater than to the current beneficiaries of suburban advantages.

I really don't agree with that whole info-rich/info-poor picture. It's the biggest menace to the future of the technology, because it leads to a lot of government intervention and manipulation and exploitation that is mostly perverse, that just retards its development. Fears like that are resulting in the re-regulation of the cable industry.

Other fears are that these technologies will destroy employment opportunities, and it's just complete nonsense. People don't get employed because they're cheap. They get employed because they're productive. These technologies are productivity tools, and by making people more productive, they make people more employable. By generating wealth, they endow new work.

Most of the fears about these technologies are completely contrary to the facts. They completely misunderstand the most essential characteristics of the technologies they're criticizing. In any society you get paid for your services to others, essentially, and if you aren't willing to make any efforts to serve others, if you expect the society to support you regardless of the value of what you do...

A gap will open between the productive and the unproductive in any society. As the society becomes richer, it will probably be easier for some people just to opt out, you know, and just essentially subsist on leftovers. But that's a decision that they make. I mean, if they want to opt out, then they can't expect to share in the largest rewards of the economy. What's really tragic is when the government actually pays people to opt out, makes opting out more profitable than actual engagement and productive services. That is a real problem in the inner city today.

I don't think technology widens the gap—it creates all sorts of new kinds of work. The industrial era actually did try to reduce workers to kind of accessories of the big, centralized, mechanical systems they served. The computer age endows individuals with greater creative capabilities. It multiplies opportunities and careers and jobs.

Do you see the current administration being beneficial or harmful in its technological policies, or is it too soon to tell?

I think so far it's been destructive. I hope in the future it sees the light. But so far they're all obsessed with the information-rich and the information-poor, thus revealing that they belong to the latter group. [*laughs*]

The idea of creating a new PCS system and having all sorts of spectrum set aside for companies owned by women and minorities and handicapped and other groups—it's just a mistake. It just favors the cynical people who create spurious companies owned by their wives to bid for the spectrum.

Trying to inflict universal service prematurely is a great mistake. The rich always use technologies, overpay for technologies in the initial era before they're perfected. That's how the initial development costs are defrayed. To artificially require that some technology be distributed more widely before it's ready will just limit its penetration.

People keep pointing to the phone company's model of universal service. Well, it took fifty years for the phone companies to deliver universal service, and there's very little evidence that any regulatory requirement was very important in this process. It probably would have happened more quickly if the gov-

ernment hadn't essentially enforced these monopoly franchises and required them in exchange to extend universal service.

There's no requirement of universal service in the television industry, yet today television has 98% penetration to homes and telephone industry has about 94% with its universal service requirement. Television did it in forty years rather than in seventy years or whatever.

Most of these industrial policies do not work, and the administration is infatuated with them. I think it's bad for technology, and what really benefits technology is lower tax rates. It allows more capital to be accumulated by individuals who can directly invest in technology companies.

> Sixty percent of the computers that are being sold today go into homes and home offices, small offices. This growth in homes and home offices is about ten times the rate of growth of TV sales.

Technology companies are complex and hard to finance. What you want is disposable personal capital to finance technology, people who really understand the project and thus won't panic when there's a setback—they actually understand the technology well enough to carry it through crises and setbacks that are inevitable in any difficult business project.

So what you want is lower tax rates, and the administration above all else is committed to increasing tax rates. That's more significant than all their industrial policies. But the industrial policies, as manifested by the Cable Act and other additional regulations imposed on cable, and their increasing itch to manipulate the phone industry, and their increasingly baleful eye on the computer industry, are so far destructive.

So what do you think about Clipper?

I think Clipper is a premature standardization. It's not perfected, it's not simple, it's not cheap, it's not effective, and so it shouldn't be adopted.

In general, my sense is that encryption technology is in an area of very dynamic advance at the moment. There are all sorts of new solutions being adduced, and it's just a mistake to fix on one technology at this juncture.

I do think that the problem they're addressing is a real problem, that terrorism and other such crime is a real threat and the National Security Agency is in some sense in an arms race with nuclear renegades and terrorists, bioengineers or whatever, and they're going to have to use lots of new technology to meet this challenge. But they're not going to have a sort of one-size-fits-all magical chip that will solve their problem.

I don't think there's an easy techno-fix to it as the Clipper people seem to imagine. As somebody said, if encryption is outlawed, only outlaws will have encryption, and that's really the implication of the Clipper strategy.

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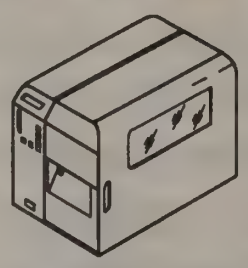

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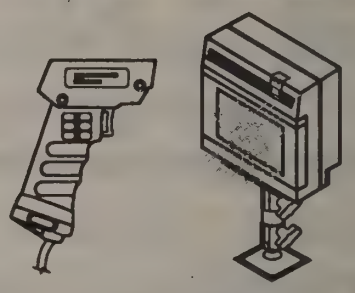

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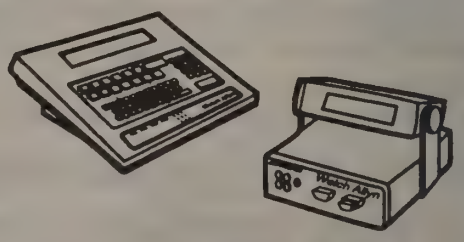

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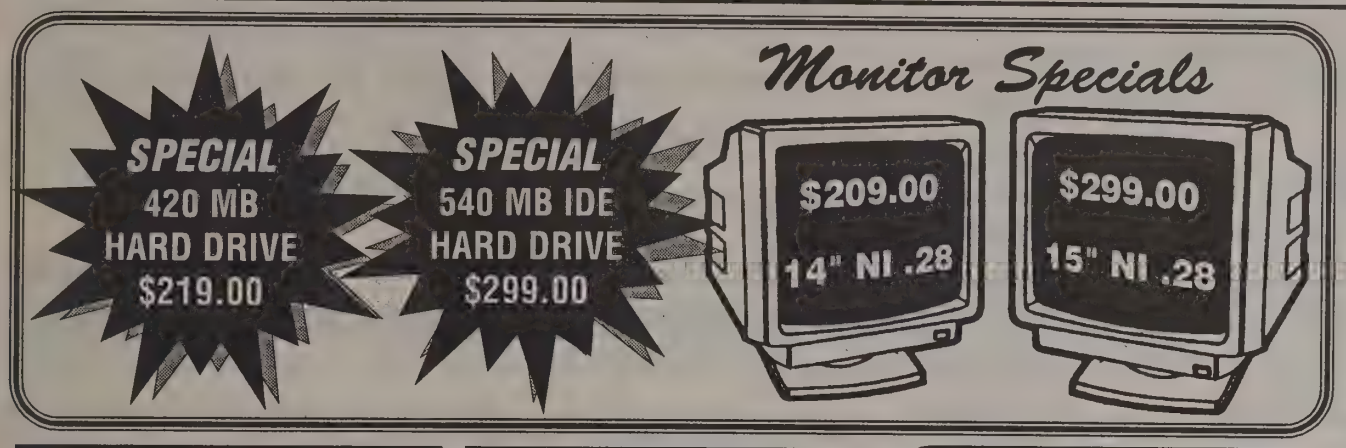

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Data Highway *continued*

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Well, I think that kind of thing will happen.

My view is that the government will have lots of new technologies that will allow it to eavesdrop on people it wants to eavesdrop on. And they may not consist in being able to read any transmission from some central point, but I don't think the Clipper chip would result in that kind of capability.

There is a longing by government for a static world, and this isn't a static world. Entrepreneurs constantly have to adapt to new environments, and government will have to get more entrepreneurial if it's going to protect us from these threats.

I do believe that there are lots of technologies. You can record things from all sorts of different remote positions and plant speakers in radios all over the place. I think they should be able to figure out how to chase the bad guys without ensnaring all the good guys in the computer industry in the process.

PRIVACY ASIDE, YOU MENTIONED EARLIER ENCRYPTION AS A TOOL FOR PROTECTING INTELLECTUAL PROPERTY. WHERE DO YOU SEE THAT GOING?

There's a company called Wave Systems in New York that has developed encryption/decryption code that allows the essential metering of information. You could, for example, put hundreds of software packages on a CD-ROM and distribute them free, and charge only when you decrypted one of the packages. Parts of the package could be usable for a specific period of time, or some limited portion of the software could be accessible, but in order to get the entire package you'd have to decrypt it. When you decrypt it, its price, which was on a tag, would drop into a memory that could be reachable over phone lines to debit an account that you have.

That's one way to charge for software. It also would work on networks, to charge for information—you only pay when you decrypt the entire item.

I think that kind of process will be vital to increasing the market for information, because you can charge per piece rather than for bandwidth or for whole libraries or large collections, and people will get the information they want when and how they want it, and they'll pay more by that means.

So I think that encryption will be very important in the distribution of all forms of intellectual property in the next era, and I think that's one of the reasons why to throw a sort of a Clipper chip in the middle of it is probably not so helpful. Although I'm not sure that Clipper would actually interfere with this further level of encryption that would be applied to these systems.

Peter Sprague, who is the new chairman of National Semiconductor, said that today if you want to get a glass of water in an information world, you have to buy the reservoir, or at least rent it. This technology will allow you to pay for your glass of water; this will mean that a lot of databases that are only currently accessible at very high cost can be just made generally available.

Nobody could afford to buy the CD-ROM of six hundred big books you can put on a CD-ROM. Nobody could afford to buy the six hundred big books. But this kind of an encryption/decryption metering process would allow you to distribute information free and then charge for its use. That is a major breakthrough, and very important to the whole future of the information era. ■

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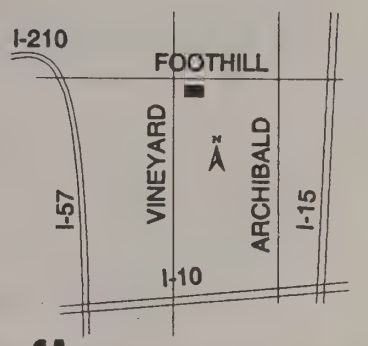

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486SX-33.....350
486DX33/40.....495
486DX2-66.....550
486DX4-100.....925
Pentium-66 PCI & VESA 1225

486DX-33/40 VESA

either system $ 1215

- Intel/AMD 486DX-33/40
- VESA Motherboard (SIS Chipset)
- 4MB RAM, 256KB Cache
- 340MB Hard Drive
- 32 bit Local Bus 16.7M Color SuperVGA Graphics Accelerator with 1MB
- Local Bus IDE Controller
- 2 Serial/Parallel/Game Port
- TEAC/NEC 1.2MB & 1.44MB Floppy Drives
- 14" NI SuperVGA Monitor with Tilt & Swivel Base (1024 x 768, .28mm dp)
- Mini Tower Case with 230 Watt Power Supply
- Green PC ZIF Socket
- 101 Key Keyboard
- Mouse & Mouse Pad

486DX2-66 VESA

$ 1350

- Intel 486DX2-66 CPU
- VESA Motherboard (SIS Chipset)
- 4MB RAM, 256KB Cache
- 420MB Hard Drive
- 32 bit Local Bus 16.7M Color SuperVGA Graphics Accelerator with 1MB (2MB Opt)
- Local Bus IDE Controller
- 2 Serial/Parallel/Game Port
- TEAC/NEC 1.2 & 1.44MB Floppy Drives
- 14" NI SuperVGA Monitor with Tilt & Swivel Base (1024 x 768, .28mm dp)
- Mini Tower Case with 230 Watt Power Supply
- Green PC ZIF Socket
- 101 Key Keyboard
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486DX4-100 VESA

$ 1745

- Intel 486DX4-100 CPU
- VESA Motherboard (SIS Chipset)
- 4MB RAM, 256KB Cache
- 420MB Hard Drive
- 32 bit Local Bus 16.7M Color SuperVGA Graphics Accelerator with 1MB (2MB Opt)
- Local Bus IDE Controller
- 2 Serial/Parallel/Game Port
- TEAC/NEC 1.2 & 1.44MB Floppy Drives
- 14" NI SuperVGA Monitor with Tilt & Swivel Base (1024 x 768, .28mm dp)
- Mini Tower Case with 230 Watt Power Supply
- Green PC ZIF Socket
- 101 Key Keyboard
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486DX2-66 VESA

$ 1650

- Intel 486DX2-66 CPU
- VESA M'board (SIS C. S.)
- 8MB RAM, 256KB Cache
- 420MB Hard Drive
- 2X CD-ROM Drive
- 16 Bit Sound Card w/CDTitle Software
- 32 bit Local Bus 16.7M Color SuperVGA Graphics Accel. w/1MB (2MB Opt)
- Local Bus IDE Controller
- 2 Serial/Parallel/Game Port
- TEAC/NEC 1.2 & 1.44MB Floppy Drives
- 15" NI SuperVGA Monitor with Tilt & Swivel Base (1280 x 1024, .28mm dp)
- Mid Tower Case w/250W UL, CSA Pwr. Supply
- Green PC ZIF Socket
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- Intel 486DX4-100 CPU
- VESA M'board (SIS C. S.)
- 8MB RAM, 256KB Cache
- 420MB Hard Drive
- 2X CD-ROM Drive
- 16 Bit Sound Card w/CDTitle Software
- 32 bit Local Bus 16.7M Color SuperVGA Graphics Accel. w/1MB (2MB Opt)
- Local Bus IDE Controller
- 2 Serial/Parallel/Game Port
- TEAC/NEC 1.2 & 1.44MB Floppy Drives
- 15" NI SuperVGA Monitor with Tilt & Swivel Base (1280 x 1024, .28mm dp)
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- Mouse & Mouse Pad

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- 420MB Hard Drive
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- PCI Bus IDE Controller
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- TEAC/NEC 1.2 & 1.44MB Floppy Drives
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- 101 Key Keyboard
- Mouse & Mouse Pad

Pentium-66 VESA

$ 2[illegible]

- Intel *Pentium*-66MHZ CPU
- VESA Motherboard
- 8MB RAM, 256KB Cache
- 420MB Hard Drive
- 32 bit Local Bus 16.7M Color SuperVGA Graphics Accelerator with 1MB (2MB Opt)
- Local Bus IDE Controller
- 2 Serial/Parallel/Game Port
- TEAC/NEC 1.2 & 1.44MB Floppy Drives
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- PCI Bus IDE Controller
- 2 Serial/Parallel/Game Port
- TEAC/NEC 1.2 & 1.44MB Floppy Drives
- 15" NI SuperVGA Monitor with Tilt & Swivel Base (1280 x 1024, .28mm dp)
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Product Spotlight

UPDATES

• **Adobe Systems** released **Adobe Illustrator 5.5 for Macintosh**, which includes the regular Macintosh and Power Macintosh versions. Registered owners can upgrade for $149 and get the Deluxe CD-ROM Edition, Adobe Acrobat, and 220 fonts free until September 2. Adobe Systems, Inc., 1585 Charleston Rd., PO Box 7900, Mountain View, CA 94039-7900. 1-800-521-1976.

• **Aladdin Systems** began shipping **Stuffit InstallerMaker 2.0**, a new version of its popular installer program. Aladdin Systems, 165 Westridge Dr., Watsonville, CA 95076. (408)761-6200.

• **Atex Publishing Systems** released **Preference for Windows v1.1**, enabling Windows users to obtain full Atex functionality. Atex Publishing Systems Corp., Bedford, MA. (617)276-1132.

• **Charles River Analytics** shipped **Open Sesame! v1.1**. The new version puts dynamic work sets on the desktop or Apple Menu or in the startup items folder, has a reminder feature, and includes speech synthesis and voice recognition capabilities. The upgrade is free to registered 1.0 users, and $99 retail. Charles River Analytics Inc., 55 Wheeler St., Cambridge, MA 02138. (617)491-3474.

• **DayStar Digital** announced **price reductions on most of its processor upgrades for the Macintosh**. The FastCache Quadra is now $199, and the 40MHz Turbo 040 with 128K cache is $1149. DayStar Digital, 5556 Atlanta Highway, Flowery Branch, GA 30542. (404)967-2077.

• **DeltaPoint** released **FreezeFrame 2**, a Windows desktop publishing and graphics package for beginners and small-office and home users. Version 1 users can purchase it with 1st Design only for $29.95, or pay $19.95 more to include 1st Press. New customers can buy FreezeFrame 2 for a limited time for $49.95. DeltaPoint, Inc., 2 Harris Ct., Suite B-1, Monterey, CA 93940. (408)648-4000.

• **FastTrax International** released **FastTrax 5.0**, an upgrade to its hard disk optimization utility. The new version has increased flexibility and faster operation. The upgrade costs $30, and a competitive upgrade is available for $40. FastTrax International, 880 Ensenada Ave., Berkeley, CA 94707. (510)525-3510.

• **HSC Software** shipped **InterActive 2.0**, an upgrade to its integrated multimedia development system. Registered users can upgrade for $89.95; SRP is $295. HSC Software, 1661 Lincoln Blvd., Suite 101, Santa Monica, CA 90404. (310)392-8441.

• **Montage Software** announced **new ports of its object-relational database management system** to Silicon Graphics, Inc. and Digital Equipment Corp. Alpha platforms. Montage Software, Inc., 1111 Broadway, Oakland, CA 94607. (510)652-8000.

• **Nomadic Systems** announced **v2.0 of its SmartSync** automatic file-transfer and synchronization solution. Suggested list price is $169.95 for one user, $495 for five-user packs. SmartSync users can upgrade to v2 for only $19.95 plus shipping, for a single-user license. Nomadic Systems, Inc., (415)335-4310.

• **Ontrack Computer Systems** released **Disk Manager Mac v3.0**. Current users can upgrade for $25. Ontrack Computer Systems, 6321 Bury Dr., Minneapolis, MN 55346. 1-800-752-1333.

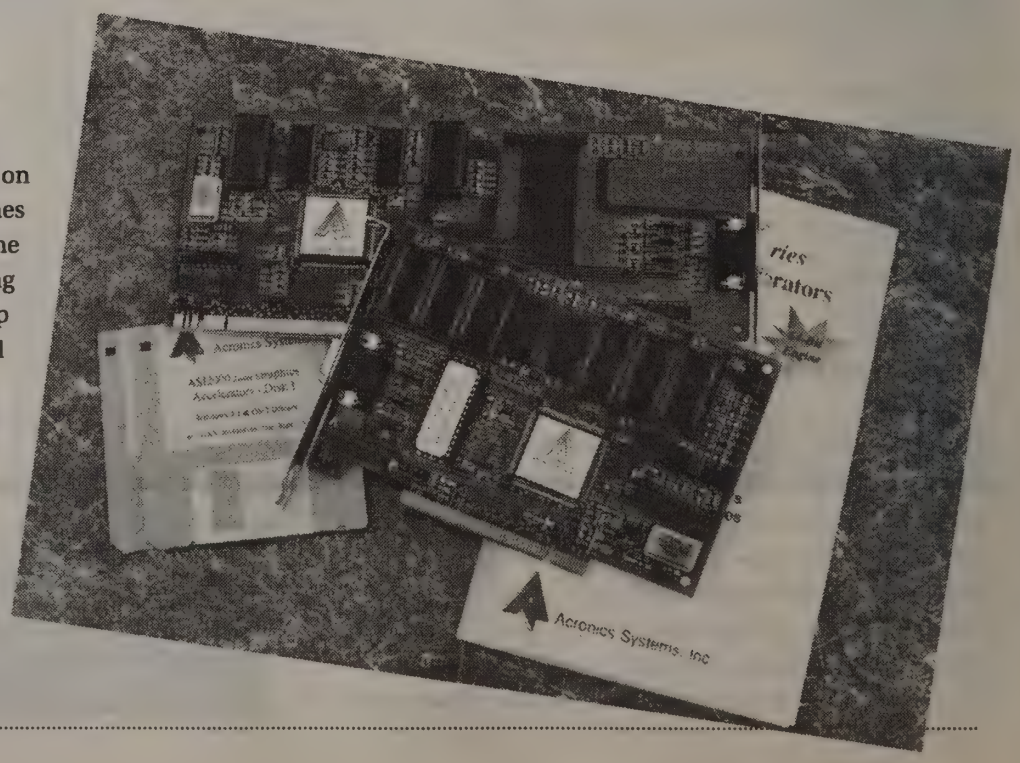
• **The Software Toolworks** released **Mavis Beacon Teaches Typing! v3 for Windows**, the first version for Windows users. It lists for $49.95. The Software Toolworks, 60 Leveroni Ct., Novato, CA 94949. (415)883-3000.

• **Working Software** announced **free Toner Tuner 1.0.6 upgrades** for registered owners. Working Software, Inc., PO Box 1844, Santa Cruz, CA 95061-1844. 1-800-229-9675.

New Products

PC Hardware

ASI2020 Taurus PCI



The ASI2020 Taurus PCI is a powerful graphics accelerator board based on a true 64-bit GUI engine and a 24-bit true-color palette DAC. It combines a Cirrus Logic 32-bit external local bus interface with a 64-bit path to the DRAM frame buffer, eliminating video-memory bottleneck and allowing for maximum system-to-video bandwidth. The Taurus PCI supports up to 1280 x 1024 noninterlaced resolution at 16.8 million colors and comes standard with 1MB of 64-bit DRAM, upgradable to 2 or 4MB. It is designed for Pentium technology but will work just as well on a 486 PCI bus system; it greatly improves Windows 3.1 and AutoCAD 11 and 12 performance; and it is optimized to support Windows NT, OS/2, AutoShade, 3D Studio, Lotus, Word, WordPerfect, WordStar, and Ventura Publisher. The Taurus PCI comes with a Green PC display power manager for energy cost savings. A lower-resolution, less expensive model, the Orion VLB, is also available. ($395 for the 4MB Taurus, $179 for the 1MB Orion) Acronics Systems, Inc., 46560 Fremont Blvd., Suite 203, Fremont, CA 94538. (510)770-3400.

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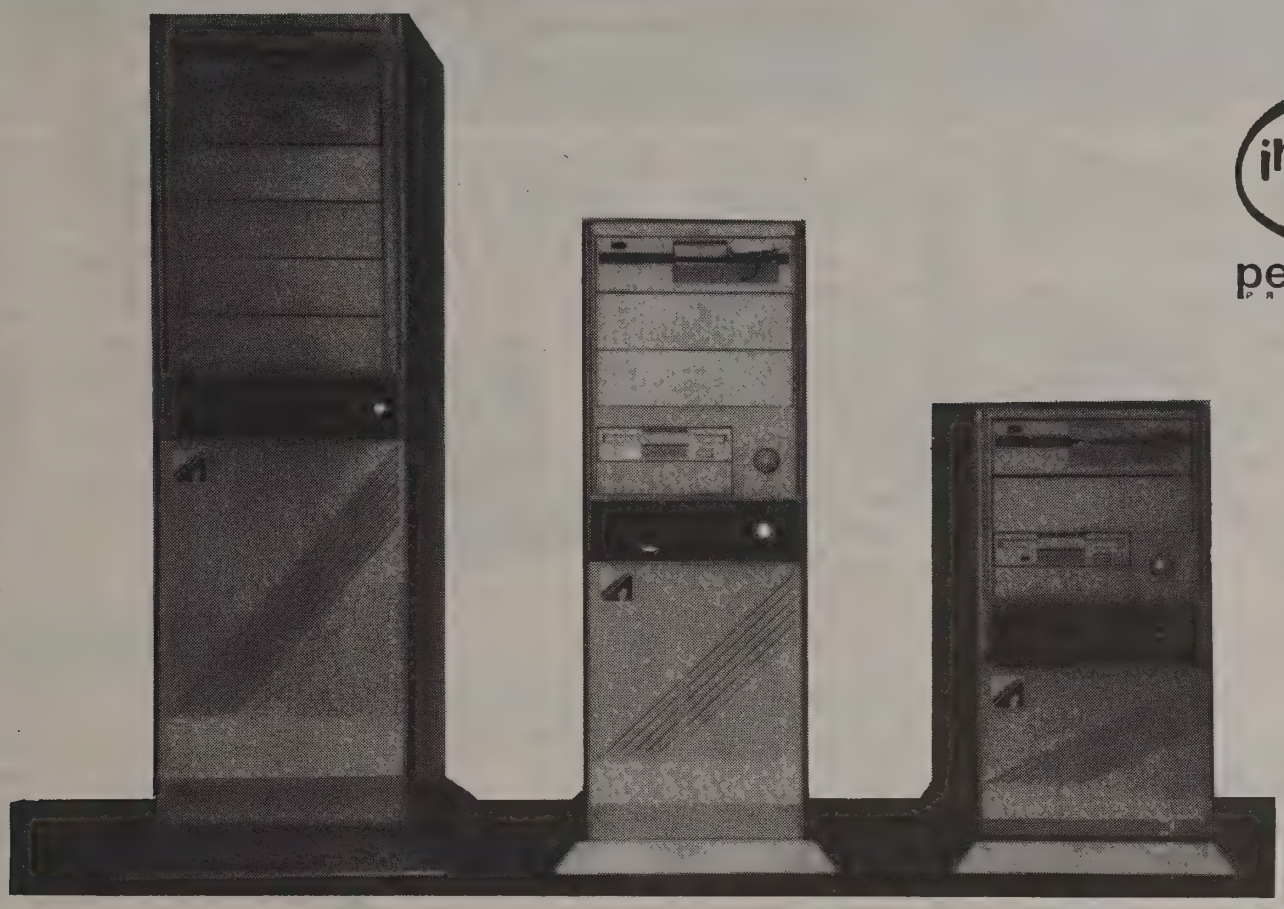

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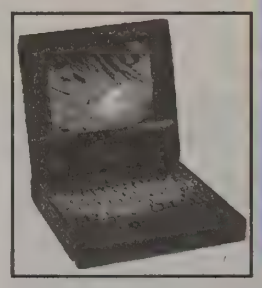

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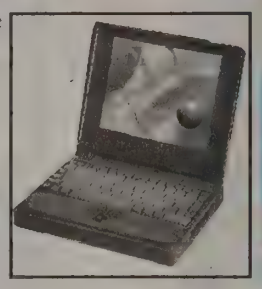

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- PCMCIA Type IV Slot
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- 9.5" Mono/Dual Scan/Active LCD Screen
- Carrying Bag w/Strap
- Microsoft DOS 6.21

250MB/4MB	Mono	Dual Scan Color	Active Color
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486DX-33	1845	2320	3320
486DX2-66	2005	2480	3480
486DX4-100	2245	2720	3720
340MB HDD	+$100		
520MB HDD	+$290		
4/8/12/16MB Card	+$210/380/620/895		
Docking Station	+$435		

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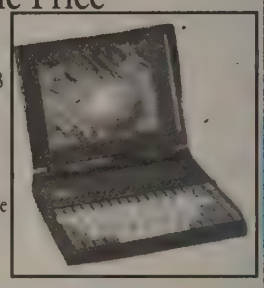
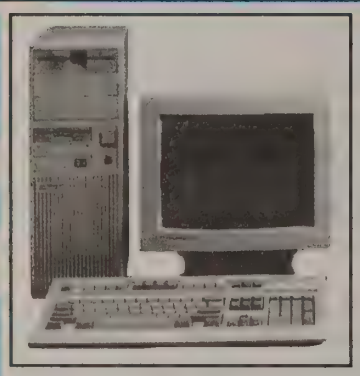


- Intel 486 CPU w/8K Cache
- 4MB RAM Exp. to 8MB or 16MB
- Removable HD 120/250/340/520MB
- 3.5" 1.44MB FDD
- NiMH Rechargeable Battery
- PCMCIA Type II Slot
- 9.5" Mono/Dual Scan LCD Screen
- Built-in Trackball Module, Removable
- 1MB Video RAM
- Carrying Bag
- MS DOS 6.21

250MB/4MB	Mono	DualScan Color
486SX-25	$1390	$1860
486SX-33	1440	1910
486DX-33	1540	2010
486DX2-66	1690	2160
120MB HDD	-$70	
340MB HDD	+$100	
520MB HDD	+$290	
4, 12MB RAM Card	+$210/610	
Docking Station	+$290	



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• Mini Tower 230W Power	• 14" SVGA .28 NI Monitor
• 101 Keyboard	• 101 Keyboard
• Enhanced Mouse	• Enhanced Mouse
• P24 Socket Ready	
• 3 VL-Bus Slots	

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INTEL 486DX2-50.....$1129
INTEL 486DX2-66.....$1199
INTEL 486DX-50.....$1229

AMD 486DX-40.....$1069
AMD 486DX2-66.....$1159
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Product Spotlight

SPiDER Black Widow Plus

The SPiDER Black Widow Plus is a Windows GUI accelerator with a 32-bit graphics coprocessor. This coprocessor assists the main accelerator chip to achieve the optimum processing speed for GUI applications. It includes drivers for Windows NT 3.1, Windows 3.1, OS/2 v2.1, AutoCAD Releases 11 and 12, WordPerfect 5.1, Lotus 1-2-3 Release 2.x, and others, and drivers are regularly updated and added. The Black Widow Plus offers up to 1600 x 1200 resolution with sixteen colors, a flicker-free refresh rate up to 90Hz noninterlaced, 16-bit and 24-bit hardware acceleration in both high and true color modes, 1MB of fast VRAM which is expandable to 2MB, and SPiDER's custom window-like software installation. ($255) SPiDER Graphics, Inc., 580 Charcot Ave., San Jose, CA 95131. (408)526-0535.

SCSIVue Diagnostic Terminators and Cables

Granite Digital has released the SCSIVue Active Diagnostic Terminators and SCSIVue Gold Diagnostic Cables in support of the new 68-pin SCSI Wide platform. The SCSIVue Terminators constantly adjust the signal voltage to what the SCSI Bus demands. They also have a diagnostic indicator incorporated into their design that analyzes what is occurring on the SCSI Bus and displays the information through LED lights. The Gold Diagnostic Cables use more gold on the contacts and connectors than other SCSI cables, improving the signal quality and reducing unwanted noise interference. The cables are constructed of triple-insulated, heavy 26-gauge wire with ferrite beads to eliminate static electricity, and are covered by a lifetime warranty. ($59 for terminators, $39 for cables) Granite Digital, 3101 Whipple Rd., Union City, CA 94587. (510)471-6442.

CD-ROMs

Interactive World Cup CD-ROM

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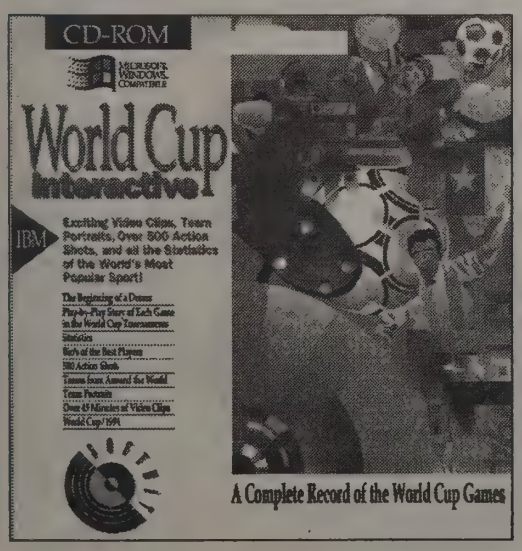

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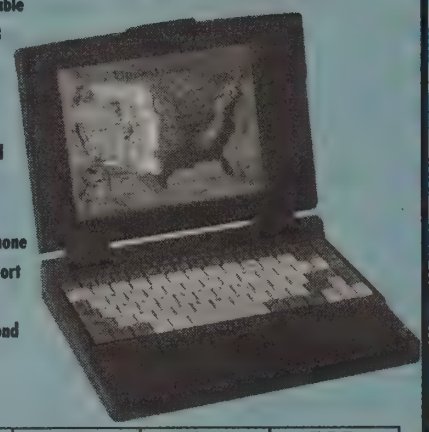

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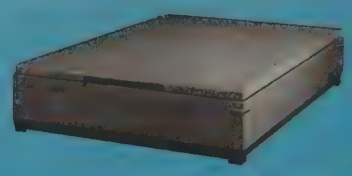

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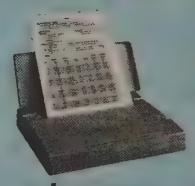

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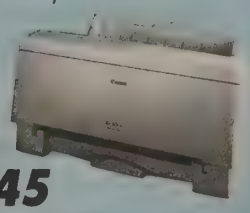

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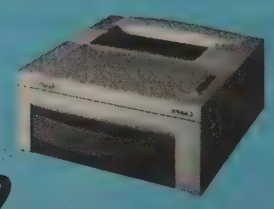

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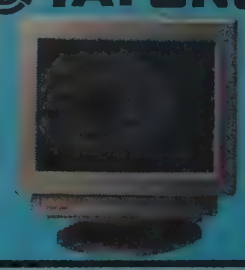

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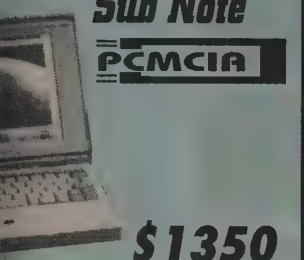

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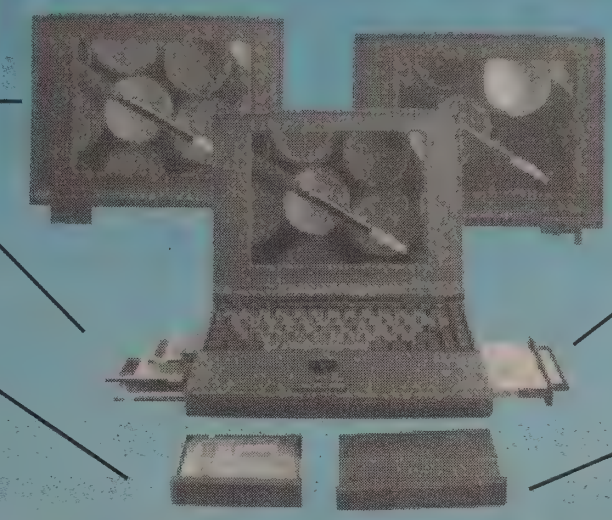

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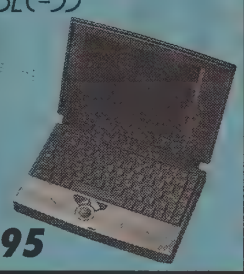

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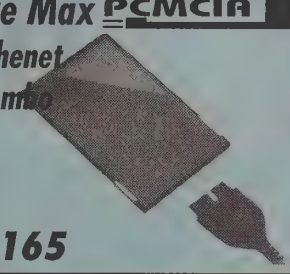

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486DX2 VLB66

- 486 DX2-66 Mhz CPU
- 256K Cache, 2 Local Bus/7 ISA Slots
- 4MB RAM up to 32MB
- 1.2 & 1.44MB Floppy Drives
- 425MB Hard Drive
- VESA Local Bus IDE/FDD Controller w/2S, 1P
- VESA Local Bus SVGA Card w/1MB
- 14" SVGA NI Monitor .28 Dot
- 101 Enhanced Keyboard
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- 256K Cache, 8 ISA Slots
- 4MB RAM up to 32MB
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Multi & Media

MULTIMEDIA 101

Art Teco '94:

Meeting Of The Multimedia Minds

I don't go to many trade shows, conferences, or conventions. I find the signal-to-noise ratio unsatisfactory, dislike the need to enclose myself for several hours in a metal box for transportation just to get to another bigger and noisier box, and generally have more enjoyable things to do with my time.

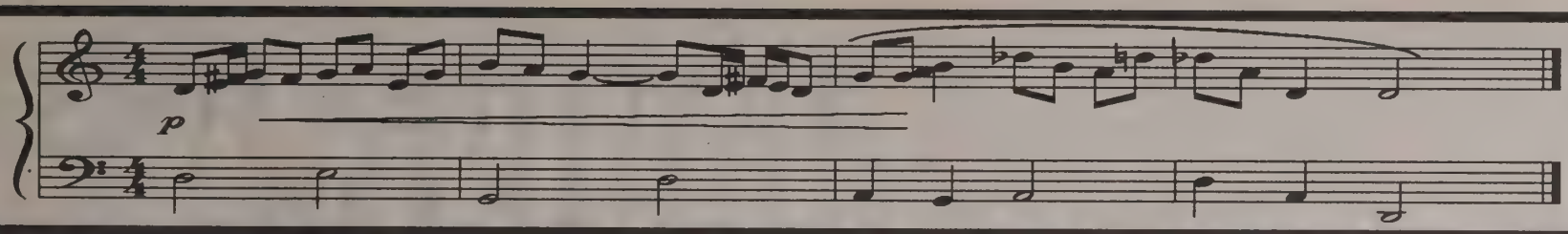
However, Art Teco '94, the First Annual United Developers Summit, looked as though it might be a cut above the average, with its beautiful Bay-side Fort Mason location and its twin promises to "pioneer a new discussion format that will let attendees interact directly with multimedia industry pioneers" and of—most unbelievable but actually delivered—free beer from the Gordon Biersch microbrewery, provided by—gasp!—Microsoft! I had to check out at least the last of these features.

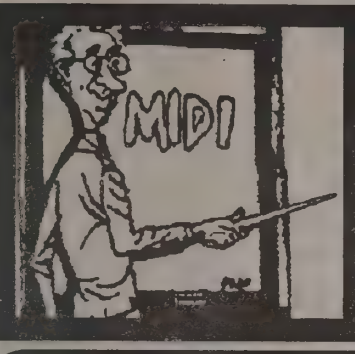
The unusual nature of the three-day event can be explained by its organizer, *Morph's Outpost on the Digital Frontier*, a monthly magazine for multimedia developers, now entering its second year of publication. Each issue is full of hands-on hints, low-cost solutions, developer profiles, tool and product reviews, and blue-sky prognostications presented in an unpretentious style, sometimes through the irreverent and imaginary figure of Morph. This is definitely not your traditional glossy computer mag. While it includes plenty of technical information, *Morph's* keeps an eye on the quirky artistry and genuine content necessary to make multimedia work culturally, and another eye on the financial and business requirements for commercial success. Even with this serious stuff, *Morph's* motto still seems to be "Toward the fun."

INTERACTIVE TALK

Art Teco's slogan was "The Best of Both Hemispheres," which came to mean parties at night and discussion and exhibits during the day. The daytime program was likewise split between tech talk and wider-ranging cultural conversation.

BY JONATHAN E.





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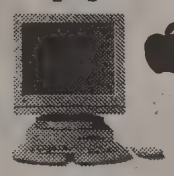

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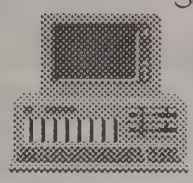

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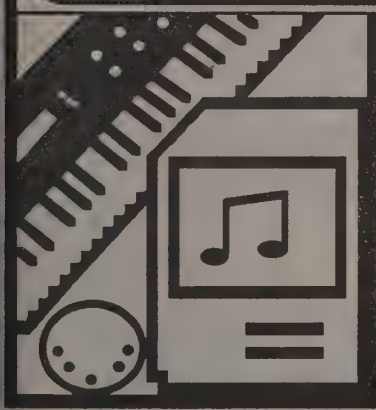

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MultiMedia & beyond

The exhibits were delightfully low key. The hall, on Fort Mason's Herbst Pavilion pier, was naturally lit, and the sound level was pleasant without the angry-insect buzz that infests most large halls with reflected sound. What made this possible, besides the elegance of the surroundings, was that Art Teco did not aim to be the biggest, highest-grossing, lowest-common-denominator show of the year. Its goals were to have a good signal-to-noise ratio, to be of service rather than sell something; an integral part of that strategy was to opt for quality rather than quantity. Yes, folks, small is still beautiful.

In keeping with the Developers Summit aspect of the event, all the exhibitors were professional-level tool and service providers rather than consumer titles. This certainly helped to keep the hype level down, although there still appears to be no end to the profusion and confusion of competing, overlapping, and continual advances that any prospective developer will have to wade through.

This variety of possibilities was also reflected in the panels. Many of the discussion titles were about the same as those you'll see at any trade show; I can't believe everything that could ever be said about these topics hasn't already been said. The theory of such discussions, I suppose, is that you will glean some fresh news from amongst the dross.

The multimedia industry seems to have a peculiar bifurcation between fast-moving technical developments (which are probably better perceived in other forums) and relatively slowly emerging cultural, conceptual, and commercial concerns that may or may not ever become reality, and that we may well be totally bored with by the time they actually do become reality.

In the meantime, endless discussion of these possibilities can be quite fun, and it can be lots of fun to hear two powerful speakers with opposing points of view. It can even be a lot of fun simply to watch a master showman like Marc Canter, one of the "inventors" of multimedia through his development of the original Director application, perform on a panel: he yawns, rubs his eyes, looks thoroughly bored as some audience member stutters through an ill-conceived question, only to pounce with unerring precision on the meat of the matter.

However, I believe that the two main purposes of these events are to allow the players to sniff each other and to attempt to form a consensus about the direction in which all this technology is taking us. The question of whether we should actually bother to develop this technology is not addressed in these circles—the cargo-cult belief in its potential benefits is almost seamless.

This is somewhat ironic, because the issues of what interactivity really "means," what its values are (how quaintly boomer!), what the real economic engine of the digital revolution is, and who has control of it were all raised when discussing this year's hot topic—interactive TV. Out of the panels I attended, Interactive TV: The Developer Market of Tomorrow was clearly the one with the highest anxiety level. Yup, that television market is still figured to be the one that matters, the one with the highest stakes despite all the talk about new media and the end of the mass market!

INTERACTIVE TV

On the one side of the interactive TV debate, there is a camp of idealists who believe that the couch-potato passivity of current television-watching habits and the content of what's shown on TV are destroying the last of America's (and the world's) moral fiber; who passionately believe that somehow we're all ready to educate ourselves and to get up and communicate with each other through that familiar-looking box. On the other side are the marketeers, who figure that with the size of the total market getting larger and the number of niche markets proliferating, something like interactive TV is just the way to keep the advertising industry healthy and reach consumers in ever more efficient ways.

The audience applauded loudly when it was suggested that the crucial task before us is breaking out of the TV and CD-ROM models of interactivity.

So you can guess that the idealists on the panel and in the audience fretted that the purported five hundred channels of tomorrow are nothing more than a design for selling us stuff, with a large downstream pipe into the home and only a tiny upstream pipe out, with significant limitations on interactivity. The audience applauded loudly when it was suggested that the crucial task before us is breaking out of the TV and CD-ROM models of interactivity. This is the sentiment you run into again and again wherever net.heads are gathered and interacting.

Actual news on interac-

Continued on page 117

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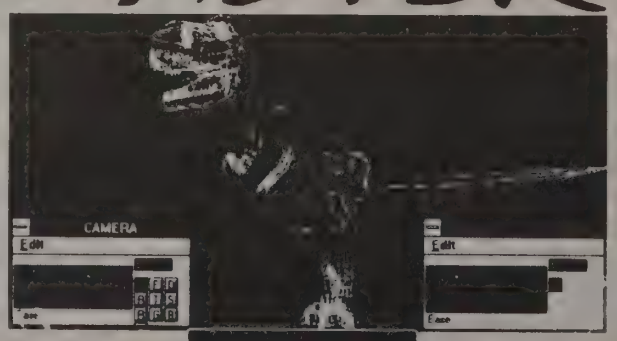

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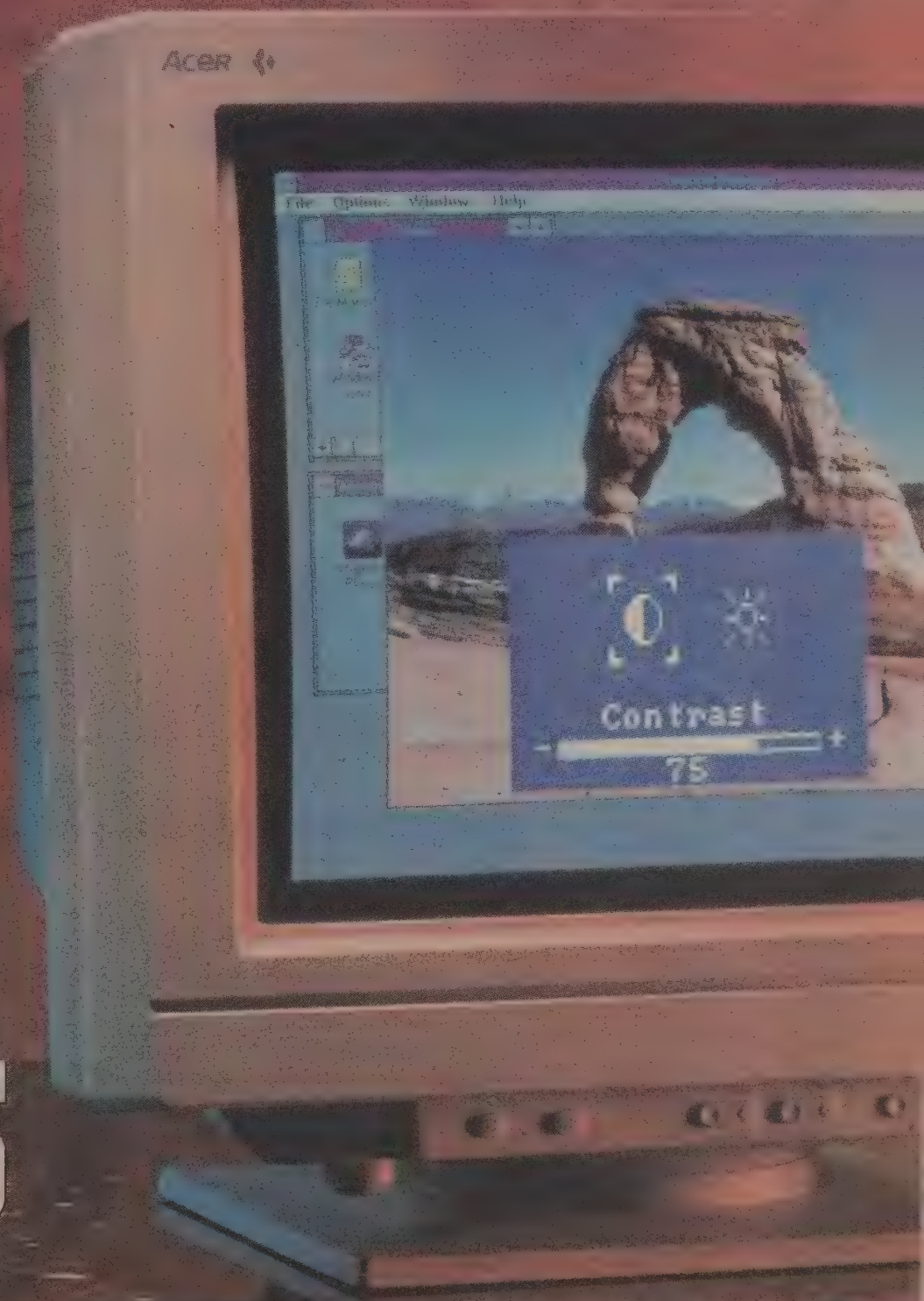

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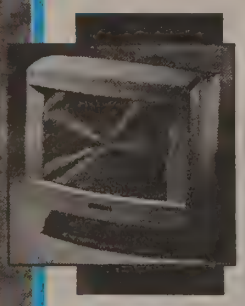

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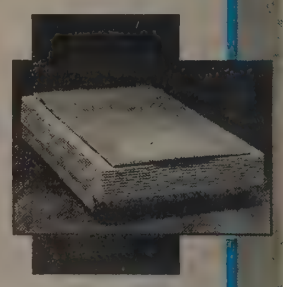

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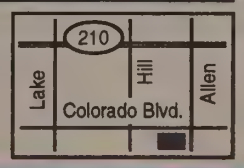

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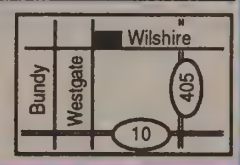

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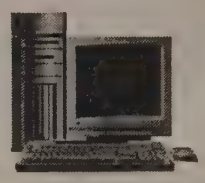

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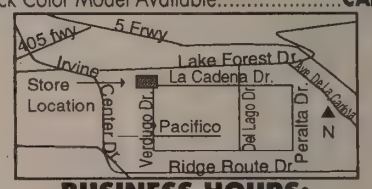

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Continued from page 112

tive TV, however, is extremely slow in coming. As Philip Elmer-Dewitt reported in the May 23 issue of *Time*, current capabilities lag far behind earlier speculative projections. It seems that what engineers can deliver is nowhere near even relatively simple interactivity. Canter summed it up by saying that he was "frustrated with the hardware"; the consensus was that interactive TV "is a developer's nightmare."

Any sort of standards in this area appear to be at least three years in the future, while one panel member, Graeme Devine of Trilobyte, suggested waiting five years. What is needed for those who want to get a head start on producing content is "middleware," that is software that will allow you to translate whatever it is you have in whatever format to whatever format eventually is decided upon. In the meantime, if you just *must* scratch that content itch, the best advice is to keep it simple.

Canter hit the nail on the head when he said that "there'll be no context for standards until we've made mistakes." He figures that meaningful standards will emerge around the third generation of technology. At the consumer level, it was agreed that there'll always be different systems used to access the content, and so the search for a single $300 set-top box is something of a red herring. The idea of such a panacea gave the panel a good laugh.

At this time, interactive TV has not even had any rigorous field testing, and so there is absolutely no blueprint to follow. It seems certain, however, that one day a technology that permits some sort of two-way consumer video communication will be commonplace. Lesley Czechowicz, a consultant to Fujitsu and a panel member, pointed out that the growth in numbers of telecommuting home workers desiring remote video connections will provide a ready market beyond simple entertainment, and that this factor will encourage the broadband infrastructure out of the house necessary for genuine interactivity.

The viewing habits of the young are further evidence that there will be a core market in the future. While a ten-year-old's idea of fun in the past was to go to a movie theatre, today it's to play video games. Picture-in-picture viewing to keep an eye on a ball game while watching cartoons is a current option. As Douglas Rushkoff, moderator of the later Computers as Culture panel and author of *Cyberia* (HarperSanFrancisco, 1994), has observed, the crucial difference between generations these days is that the younger generation expects to be able to control what's onscreen to a much greater extent than simple channel-surfing. Doug Millison, editor-in-chief of *Morph's* and moderator of the discussion, has put his finger on this pulse and identified these active young viewers as "screenagers." If these observations are correct and these mess-with-it attitudes do not diminish into old-fashioned linearity with the aging process, there will be a radically different atmosphere toward television in the future, and a new market will be born.

The struggle between the PC-centric model of mass net.conversations and the TV model of broadcast is going to be a long, and, I suspect, inconclusive one. As Millison pointed out, both models work, and, as I've previously mentioned in this column, new media will not supplant the old but will augment them.

The plans for content are so far pretty pedestrian. Movies-on-demand is the first thing almost everyone thinks of. Home shopping is close behind, followed by time-shifting of programming, and then choosing your camera angle at sporting events or following a particular golfer. These obvious choices are only the first step of overlaying present material with some minimal interactivity.

It was generally acknowledged that it will be very hard to create

Continued on page 130

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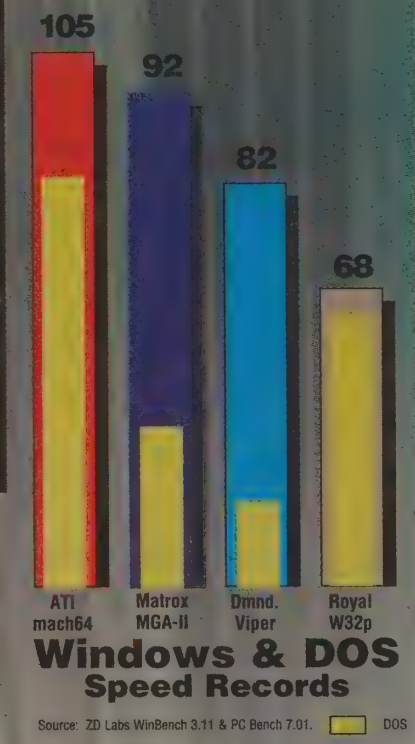

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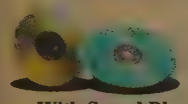

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Whether you call it the information super-"highway," "hypeway," or "tollway," one thing is clear, people will continue to demand more information. People also want real-time updates and instant access. Only a few years ago, you couldn't even get twenty-four-hour checking account information using the telephone; today I've often lamented the fact that the database was only updated daily. It's just human nature: yesterday's accomplishments become today's standards, and tomorrow we want more. This growing need for immediate information will be a driving force behind the information revolution.

SCALA INFOCHANNEL

Scala has recognized the advantages of the TV medium for providing information. Nearly everyone on this planet knows what a TV is. Its impact on the cultures of the world cannot be disputed. People will effortlessly watch TV with little coaxing, and the medium is one of the cheapest ways to distribute information to masses of people. The real hurdle with TV is not the medium itself but with program production.

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THE SOFTWARE

InfoChannel shares basically the same interface and presentation power as its cousin, Scala Multimedia 300. The main differences are InfoChannel's scheduling and networking features, and its ability to update a presentation while it continues to run. Using Scala Multimedia 300, you would have to stop the presentation, make the changes, and then restart it.

Continued on page 125

BY DOUGLAS J. NAKAKIHARA

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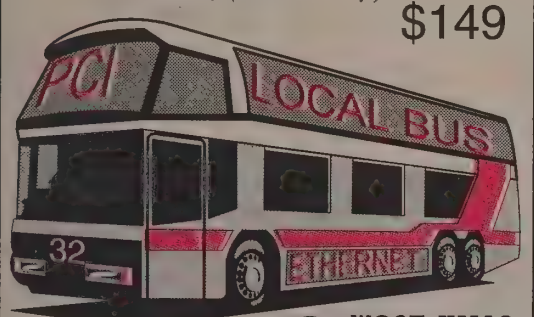

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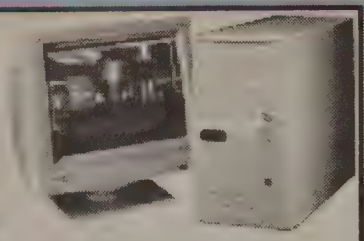

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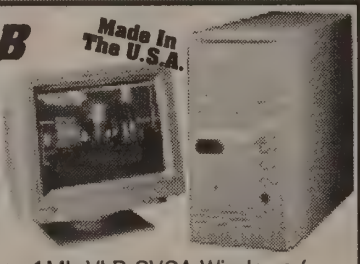

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- 1.2Mb & 1.44Mb FDD
- 2 Ser./1 Par./1 Game
- VLB IDE/FDD Controller
- 1Mb VLB SVGA Windows/ Graphics Accelerator
- 101 Key Enhanced Keyboard
- Mid-Vertical Case w/230W PS
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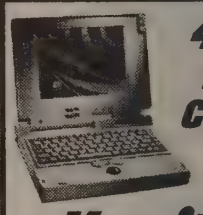

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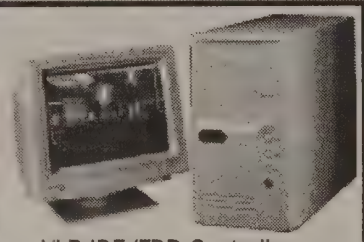

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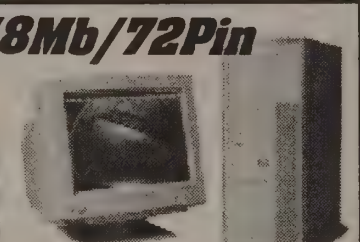

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- 1.2Mb & 1.44Mb FDD
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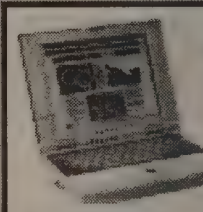
- VLB IDE/FDD Controller
- 1Mb PCI SVGA Windows / Graphics Accelerator
- 101 Key Enhanced Keyboard
- Mid-Vertical Case w/230Watt Power Supply
- **Monitor Optional.....**



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- 101 Key Enhanced Keyboard
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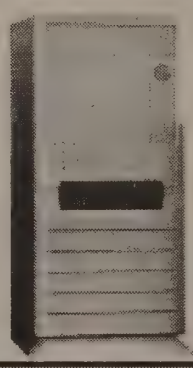
- **Monitor Optional.....**

Intel Pentium 60/66/90 PCI

Pentium-90Mhz .. $2449
Pentium-66Mhz .. $2129
Pentium-60Mhz .. $2029



- Intel Pentium PCI Mbd & Intel Pentium 60 or 66Mhz CPU w/256K Cache
- **8Mb RAM, 540Mb HDD** w/PCI Controller
- 1.2Mb & 1.44Mb Floppy Drives
- 2 Ser./1 Par./1 Game
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MITAC 486/33 Color $1788

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Harmony IVA Multimedia Power Kit **$615**
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- 7 CD titles - MPC Encyclopedia, US Atlas, World Atlas, Return To Zork, Loom, Kodak Photo CD, Reference Library

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- A pairs of Stereo Speakers
- Software bundled: Multimedia Encyclopedia, The .. Animals!, Aldus PhotoStyler SE, Just Grandma & Me, Where in the World is Carmen Sandiego - Deluxe

Sony / Sound Blaster 16 Bundle **$259**
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- **Sound Blaster 16** Stereo Sound Card

Sony / Spectrum Bundle **$269**
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- **Media Vision Pro Audio Spectrum 16** Stereo Sound Card

Panasonic CR-563/SoundBlaster 16 Bundle **$255**
- **Panasonic CR-563 2X** Int. CD-ROM (320ms,300k)
- **Sound Blaster 16** Stereo Sound Card

NEC CDR-210 / Spectrum 16 Bundle **$279**
- **NEC CDR-210 2X** SCSI (300Kb/s, 280ms)
- **Pro-Audio Spectrum 16** Stereo Sound Card

NEC CDR-510 / Spectrum 16 Bundle **$489**
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- **Pro-Audio Spectrum 16** Stereo Sound Card

Toshiba / Spectrum Bundle **$319**
- **Toshiba 4101 Int. 2X** SCSI CD-ROM (300Kb/s, 320ms)
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Creative Lab Sound Blaster 16 MCD	$168
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Creative Lab Sound Blaster 16 SCSI II ASP	$208
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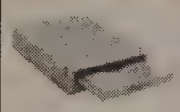
***** Please call for prices on ATI, Aztech Labs, Cardinal, Diamond, Logitech, Roland, Sigma Designs, & Turtle Beach Sound Products***

CD-ROMs



Mitsumi

Mitsumi FX001D Int. CD-ROM (Double Speed,250ms)	$142
Mitsumi FX001D Int. CD-ROM with Interface	$149

NEC

NEC CDR-210 Int. OEM SCSI CD-ROM (320ms,300k,)	$168
NEC CDR-510 Int. 3X Speed CD-ROM (195ms,450K)	$375
NEC CDR-400 3Xp Portable 3X Speed CD-ROM	$480
NEC CDR-500 3Xi Internal 3X Speed CD-ROM	$515
NEC CDR-6003Xe External 3X Speed CD-ROM	$605
NEC CDR-900 4Xe External 4X Speed CD-ROM	$985

Panasonic Office Automation

Panasonic CR-562 Int. 2X CD-ROM (320ms,300kb/s)	$149
Panasonic CR-5632Int. 2X CD-ROM w/ Interface	$165

SONY

SONY CDU-33A Internal 2X CD-ROM (300k,280ms)	$154
SONY CDU-33A Internal 2X CD-ROM w/Interface	$170

TOSHIBA

Toshiba 4101B Int. SCSI CD-ROM 320k, 275ms	$199
Toshiba 3401B Int. SCSI CD-ROM 320k, 200ms	$309
Toshiba 3401E Ext. SCSI CD-ROM 320K, 200ms	$495
Toshiba 3401P Portable SCSI CD-ROM	$580

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Conner TapeStor 250MB Tape Backup w/One Pre-formatted Cartridge	$165
Conner TapeStor 250MB **External Parallel Port** Tape Backup w/One Pre-formatted Cartridge	$325

Colorado

Colorado JT-10 120MB **Parallel Port** External	$220
Colorado JT-20 250MB **Parallel Port** External	$345
Colorado DJ-10 120MB Internal Tape Backup	$109
Colorado DJ-20 250MB Internal Tape Backup	$179
Colorado Int. Power Tape 1.0GB Tape Backup	$650
Colorado Int. Power Tape 2.0GB Tape Backup	$955
Colorado Int. Power Tape 4.0GB Tape Backup	$1195
Colorado Ext. Power Tape 2.0GB Tape Backup	$1095
Colorado Ext. Power Tape 4.0GB Tape Backup	$1425
Colorado PowerDAT 6000 Internal 2.0GB TB	$1120
Colorado PowerDAT 6000 External 2.0GB TB	$1350

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Canon BJ-200e Bubble Jet Printer	$318
Canon BJC-600 Color Bubble Jet Printer	$595
Canon BJC-800 Color Bubble Jet Printer	$1533
Canon BJC-820 Color Bubble Jet Printer (Wide)	$1647
Canon LBP-4 Plus 4PPM Laser Printer	$595

Citizen

Citizen Notebook II Ink Jet Printer (Professional,Optional Color)	$318
Citizen GSX-190 Printer (9pin/color option)	$159
Citizen GSX-220 Quiet Printer (24pin/color option)	$185
Citizen GSX-230 Quiet Printer (24pin/270cps/color option)	$226
Citizen GSX-240 Quiet Printer (24pin/300cps/80col/color opt.)	$290
Citizen GSX-145 Printer (24pin/192cps/132col/color option)	$355
**** Color Kit for Citizen GSX190, GSX-230 or GSX-240*	*+43*

Panasonic

Panasonic KX-P1150 Printer (9pin/240cps/80col)	$139
Panasonic KX-P2023 Quiet (24pin/240cps/80col)	$199
Panasonic KX-P2123 Quiet (24pin/240cps/80col/color opt.)	$235
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Panasonic KX-P3124 Quiet (24pin/320cps/80col/color opt.)	$369
Panasonic KX-P3624 Quiet (24pin/300cps/132col)	$428
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Panasonic KX-P5400 LED Post Script Printer	$849
Panasonic KX-P4410 Laser (5ppm/512K/300dpi)	$549
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Panasonic KX-P4440 Laser w/SaintPrint (10pm/1MB/300dpi)	$1189

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Hewlett Packard Portable Printer	$349
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Hewlett Packard DeskJet 560C Color InkJet Printer	$589
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Hewlett Packard LaserJet 4P Laser	$945
Hewlett Packard LaserJet 4 Plus Laser	$1455
Hewlett Packard LaserJet 4M Plus Laser	$1925

System Boards

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SYSTEM BOARDS (w/o CPU, 0K Memory) - INTEL

Intel Pentium **PCI** 90Mhz M/B w/256K	$515
Intel Pentium **PCI** 66Mhz M/B w/256K	$405
Intel Pentium **PCI** 60Mhz M/B w/256K	$385

AMI (PCI,VLB,EISA)

SYSTEM BOARDS (w/CPU, 0K Memory) - AMI

AMI Pentium **PCI** 60Mhz w/256K	$1350
AMI Pentium **VLB** 60Mhz M/B w/256K	$1325
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AMI 486DX-33 **PCI** M/B w/256K	$700
AMI Enterprise IV 486DX2-66MHz **EVLB** M/B w/256K	$885
AMI Enterprise IV 486DX-50MHz **EVLB** M/B w/256K	$900
AMI Enterprise IV 486DX-33MHz **EVLB** M/B w/256K	$750
AMI Super Voyager II 486DX2-66MHz **VLB** M/B w/256K	$760
AMI Super Voyager II 486DX-50MHz **VLB** M/B w/256K	$775
AMI Super Voyager II 486DX-33MHz **VLB** M/B w/256K	$625
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AMI Super Voyager II 486SX-25MHz **VLB** M/B w/64K	$375

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Micronics Pentium **EISA PCI** 66Mhz M/B w/256K	$1625
Micronics Pentium **EISA PCI** 60Mhz M/B w/256K	$1450
Micronics Pentium **PCI** 66Mhz M/B w/256K	$1450
Micronics Pentium **PCI** 60Mhz M/B w/256K	$1345
Micronics M4P 486DX2-66 PCI M/B w/256K	$805
Micronics M4P 486DX2-50 PCI M/B w/256K	$675
Micronics M4P 486DX-33 PCI M/B w/256K	$665
Micronics M4P 486SX-33 PCI M/B w/256K	$460
Micronics E3V 486DX2-66MHz EISA VLB M/B w/256K	$920
Micronics E3V 486DX2-50MHz EISA VLB M/B w/256K	$795
Micronics E3V 486DX-33MHz EISA VLB M/B w/256K	$785
Micronics MX-30 486DX2-66MHz **VLB** M/B w/256K	$700
Micronics MX-30 486DX2-50MHz **VLB** M/B w/256K	$570
Micronics MX-30 486DX-33MHz **VLB** M/B w/256K	$560
Micronics MX-30 486SX-33MHz **VLB** M/B w/128K	$368
Micronics MX-30 486SX-33MHz **VLB** M/B w/0K	$346
Micronics MX-30 486SX-25MHz **VLB** M/B w/0K	$275
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Micronics Mini 486DX-50MHz **ISA** M/B w/256K	$700
Micronics Mini 486DX2-50MHz **ISA** M/B w/256K	$565
Micronics Mini 486DX-33MHz **ISA** M/B w/256K	$555
Micronics Mini 486DX-33MHz **ISA** M/B w/128K	$530
Micronics Mini 486SX-33MHz **ISA** M/B w/128K	$355
Micronics Mini 486SX-33MHz **ISA** M/B w/0K	$305

Acer (PCI,VLB)

SYSTEM BOARDS (w/o CPU, 0K Memory) - Acer

Acer Pi1 486 **PCI** M/B w/256K Cache (Green, 72pin) - ZIF, IDE & IO	$220
Acer Vi11 486 **VLB** M/B w/256K Cache - ZIF	$118

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SYSTEM BOARDS (w/o CPU, 0K Memory) - ASUS

Asus Pentium 90/100MHz Dual-Processor M/B w/256K Cache	$1350
Asus E-P5MP4 Pentium 60/66MHz **EISA PCI** M/B w/256K Cache	$575
Asus I-P5MP3 Pentium 60/66MHz **PCI** M/B w/256K Cache	$415
Asus I-486SP3 486 **PCI** M/B w/256K Cache w/SCSI & IO	$385
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AVAX New! (VLB)

SYSTEM BOARDS (w/o CPU, 0K Memory) - AVAX, made in USA

AVAX 486 **VLB** M/B w/256K Cache (Green, 72pin) w/ZIF	$150

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OPTi 486G **VLB** M/B w/256K Cache (Green, 72pin)	$119
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OPTi 486 **VLB** M/B w/128K Cache (Slave mode)	$96
OPTi 386**DX-40** M/B w/128K Cache w/CPU	$123

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VEGA 486S VLB M/B w/256K (3VLB)	$175
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Intel 486DX2-50MHz CPU	$290
Intel 486DX-33MHz CPU	$268
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AMD 486DX2-50MHz CPU	$255
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DX-17F 17" Green FST (1280x1024,.28dp) ... **$699**

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4000DC 17" Digital NI (1280x1024,.28dp) **$765**

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17G 17" Digital Multi-Freq (.28dp,1280x1024) .. **$789**
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Graphics Wonder VLB w/1Mb **$160**
Graphics Ultra Plus ISA w/1Mb **$165**
Graphics Ultra Plus VLB w/1Mb **$165**
Graphics Ultra Pro ISA w/2Mb **$289**
Graphics Ultra Pro VLB w/2Mb **$289**
Graphics Ultra Plus PCI w/1Mb **$175**
Graphics Ultra Pro PCI w/1Mb **$298**
Graphics mach64 Turbo w/2Mb ISA/VLB/PCI .. **$395**

DIAMOND

SpeedStar Pro Graphics Accelerator w/1MB **$110**
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Stealth-24 ISA Windows Accelerator w/1MB **$168**
Stealth-24 VLB Windows Accelerator w/1MB **$150**
Stealth Pro VLB Graphics Accelerator w/1MB **$250**
*** 2Mb Upgrade for Stealth Pro* ..... **+$75**
Viper VLB Graphics Accelerator w/2MB VRam **$345**
Stealth 32 PCI w/2MB **$235**
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Orchid KELVIN 64 VLB 1Mb **$170**
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Hercules Dynamite Pro VLBw/2Mb **$220**
Hercules Dynamite Pro PCI w/2Mb **$255**
Hercules Graphite Pro ISA w/1Mb **$275**
Hercules Graphite Pro VLB w/1Mb **$275**
Hercules Graphite Pro ISA w/2Mb **$400**
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***** Please call for prices of Boca, Cardinal, Micronics, Sigma Designs, STB, & SuperMac Video Cards.***

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TEAC 1.2MB FDD (5.25") **$52**
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Maxtor MX-7345A 345Mb IDE HDD (14ms) **$275**
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Maxtor MX-7345S 345Mb SCSI HDD (14ms) ... **$295**

Quantum™

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ProDrive LPS 340Mb SCSI2 HDD (13ms,128K) ... **$289**
ProDrive LPS 540Mb SCSI2 HDD (13ms,128K) ... **$415**
ProDrive 1080S 1080MB SCSI-2 HDD (5yr wrnty) . **$810**
ProDrive 1225S 1225MB SCSI-2 HDD (5yr wrnty) **$955**
ProDrive 1800S 1.8GB SCSI-2 HDD (5ry wrnty) **$1080**

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Western Digital AC1210 210MB IDE HDD (13ms) . **$212**
Western Digital AC2250 250MB IDE HDD (13ms) . **$240**
Western Digital AC2340 340MB IDE HDD (13ms) . **$248**
Western Digital AC2420 420MB IDE HDD (13ms) . **$275**
WD AC2540 540Mb IDE HDD (12ms) **$370**

IBM

IBM 340MB IDE HDD (12MS ACCESS) **$265**
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IBM 1.0GB SCSI-2 HDD (8MS ACCESS) **$750**
IBM 1.08GB SCIS-2 HDD (8MS ACCESS) **$1330**

****** Please call for Digital (DEC), Hewlett-Packard, IBM, Micropolis, Mini-Stor, Seagate & Storage D.***

Syquest Drives

Mitac 105MB IDE Int. Removable Disk Kit **$320**
Mitac 105MB IDE EXT. Removable Disk Kit **$430**
SQ3105 105MB IDE Int. Removable Disk Kit **$350**
SQ3105 105MB Ext. IDE Removable Disk Drive **$430**
SQ400 44MB Cartridge **$75**
SyQuest SQ800 88MB Cartridge **$108**
SyQuest SQ310 105MB 3.5" Cartridge **$72**

Modems

INTEL

Intel Internal 144/144 Fax Modem **$149**
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Continued from page 120

A schedule can be set for groups or individual pages so that they are displayed at a certain time. Dates and days of the week can also be specified. This is particularly useful to prevent outdated advertisements and promotions from being displayed.

InfoChannel is also capable of controlling many devices, like VCRs, DATs, laserdiscs, MIDI, and the VideoToaster—now that's real multimedia.

NEW VERSION

The newest version of InfoChannel adds MPEG support using an optional MPEG decoder board. Software-based MPEG encoding has also been announced. Other new features include built-in advertiser billing, better image manipulation tools, framegrabber support, and outline text capability.

STATIONS

An InfoChannel "Master Station" is basically an Amiga running the InfoChannel software. It is on this machine that all of the text, graphics, animations, and audio are compiled into a presentation.

A "Player Station" is an individual Amiga computer with InfoChannel player-only software. The Master Station coordinates and controls the distribution of InfoChannel presentations to the Player Stations. The InfoChannel's ScalaNet module handles maintenance, configuration, and supervision of the Player Stations. It also controls password protection, author privileges, statistics collection, and other administrative tasks.

In the simplest implementation, a Master Station is used with a single Player Station connected to a network of TVs. A classic example of this would be a cable TV broadcast of a programming schedule, or in a closed-circuit situation. There is no interactivity here and all of the TVs would simultaneously display the same information. A hotel might also implement such a system to display an event schedule.

Since the Player Stations are independent machines, they can individually interact with users. As a result, multiple players can provide different information depending on the needs of the user. You can also have multiple Master Stations that transmit data to a group of players. Each player can individually merge the received data. InfoChannel can also accept data from mainframes, minis, and PC networks and integrate it into a presentation.

TRANSMISSION

If there is only one Player Station and the Master Station is not located too far away, the two computers can be linked using an inexpensive null modem cable. An Ethernet-based Novell or TCP/IP local area network can also be used to distribute the presentation. An easy way to distribute presentations over long distances is using standard telephone lines and modems. ISDN (Integrated Services Digital Network) lines, satellite, and broadcast technology are also supported.

CHANNEL 4000

Channel 4000 interviewed key people in the Amiga community and gave subscribers invaluable guidance on what they should be doing to protect their desktop video businesses.

The Master Station will automatically compare the Master and Player stations and not transmit duplicate data. If there is a time-charge imposed on the transmission, like telephone charges, this feature can be a real money saver. This is especially true if text is usually the only thing updated on a regular basis. Larger files like animations and other graphics can be preinstalled using floppy disks.

REAL LIFE USES

Scala boasts a large number of InfoChannel installations throughout the world—Hilton, Sheraton, Marriott, Ford, March Air Force Base, GM, Nissan, JC Penney, American Airlines, Boston University, and Shell Oil. The number of hotel installations is impressive. Most of the systems are in Europe, but there are several in the US.

A healthcare provider in Virginia uses interactive InfoChannel kiosks in their hospital lobbies. The system provides patients and visitors twenty-four-hour access to all types of graphic and printed information, including detailed direction information.

The SAS Scandinavia Hotel in Oslo, Norway, uses InfoChannel for its five hundred-room hotel. InfoChannel provides information on restaurants, bars, the pool and sauna, TV schedule, laundry services, and other hotel services. Information is updated several times a week, and management loves the ability to make changes in a matter of seconds.

A cable company in Michigan serving forty thousand households uses several Player Stations. Each player provides programming for a particular local network. Programming includes information from the public library, local government, and schools.

In England, a supermarket chain has an interactive electronic cookbook kiosk. Using a touch screen, customers can view recipe suggestions and also get printouts and coupons. In Holland, one of the largest Dutch banks, VSB Bank, also uses a touch screen InfoChannel system to provide individual information on deposits, loans, insurance, and real estate. A second InfoChannel broadcast displays general bank information.

CHANNEL 4000

A cutting edge implementation of InfoChannel is "Channel 4000" created by Alpha Video, located in Minnesota. Along with a silent partner, Alpha Video is owned by two former NewTek sales managers, Reid and George Johnson (no relation). In the past three years, the revenues for the desktop video dealer have grown from $4.5 million to $9 million in annual revenue.

MultiMedia & beyond

Former NewTek VP Paul Montgomery called Alpha Video "the world's best desktop video dealer."

In an effort to capitalize on Alpha Video's expertise in desktop video and network dealers with similar businesses, Channel 4000 was born. It is promoted as the world's first private desktop video television channel. The InfoChannel broadcast is transmitted via modem to subscribers five days a week, and each broadcast runs about fifteen minutes. Each subscriber has its own Player Station.

Though the service, which began in September 1993, started out heavily Toaster-oriented, changes in the industry—most notably Commodore's bankruptcy—have caused Channel 4000 to cover more and more non-Amiga-based products. The main subscriber base is referred to as the "DeskTop Video Wizards Network." For the most part, these are Video Toaster dealers.

Channel 4000 broadcasts are automatically transmitted late at night to take advantage of lower telephone rates. Nearly all of the graphics, animation, and audio are preinstalled on the remote Player Stations, so the broadcast usually consists of only a small player script file that can be transmitted in less than a minute.

THE BROADCAST

From the broadcast menu a subscriber can choose any one of the five most recent broadcasts. The entire broadcast is complemented with catchy background music. Every broadcast is divided into various segments that more or less cover a certain topic. Limited advertising time is available during the broadcasts. However, to date, there has been little advertiser support.

Alpha Video has created custom backgrounds to give the broadcast its own unique look and feel. The backgrounds provide an exciting yet comfortable backdrop for the informative text that is tastefully wiped in. Large legible fonts are used and the music enhances reading the text.

Channel 4000's aim is to keep its subscribers up to date and informed on a daily basis. If you consider that traditional printed materials like magazines and company flyers are out of date by weeks or months by the time they are received, Channel 4000 is providing essentially real-time news.

Coverage of the current uncertainty surrounding the Amiga with Commodore's unknown future has demonstrated the value of Channel 4000's up-to-the-minute infor-

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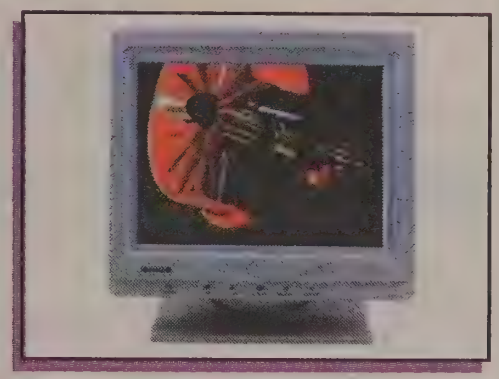

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- 20 Programmable Digital Control Memory Settings Available for Picture Sizing and Centering
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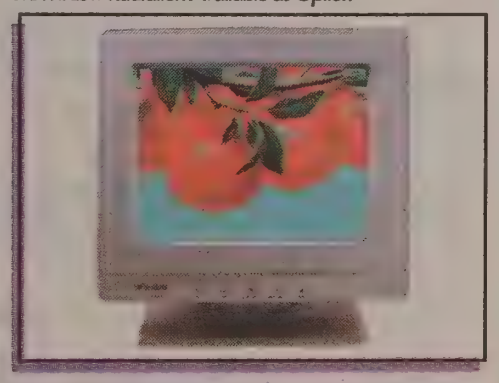

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mation. Since the day the infamous *Wall Street Journal* article hit, they have been doing their best to wade through the rumors and sort between fact and fiction. Their telephone interview with one of the bankruptcy trustees—before anyone even knew who they were—was unprecedented. They have interviewed other key people in the Amiga community and given subscribers invaluable guidance on what they should be doing to protect their desktop video businesses.

Channel 4000 subscription rates range from $50 to $350 a month, depending on the annual revenue of the subscriber. Alpha Video sells and leases Player Stations. You can use your own A1200 or A4000 (AGA required), provided you have enough free disk space and a supported modem. However, you are a lot less likely to encounter transmission problems with a dedicated machine.

Implementations of InfoChannel like Channel 4000 are providing a glimpse of things to come. It's easy to generalize about the information superhighway and how long it will take to pave. The fact of the matter is: the pioneering efforts of companies like Alpha Video demonstrate that the technology is already here today.

LATE NEWS

Just as I was about to put this article to bed, I received the sad news that the plug was being pulled on Channel 4000. Alpha Video was unable to expand the Channel 4000 subscriber base beyond Amiga/Video Toaster dealers. They needed strong advertiser support that could not come from Amiga developers alone; without a PC-based InfoChannel and no supply of Amiga 1200s, they could not offer an affordable player system. (On a somewhat related note, there is an interesting rumor that a shipment of newly manufactured 1200s has appeared in Europe.)

George Johnson stated that "ending Channel 4000 is not an issue of us giving up on this. We're even more excited about this than ever. We think there is a ton of other applications. We learned a lot from Channel 4000 and we're just going to keep going with this thing."

Resources are now being focused on Alpha Video's Private Channels division to promote their Custom Channel and Alphachannel products. With Custom Channel, they will produce and distribute a daily InfoChannel broadcast for clients—essentially a customized Channel 4000. Their Alphachannel product is geared toward a cable/broadcast station or closed-circuit situation. This can be an interactive application where viewers can affect what's being shown using their telephone. The interaction can be real-time or queued. If they want to, clients can take a totally hands-off approach and merely provide raw information to Private Channels and let them take it from there.

Private Channels has already been contracted to do several InfoChannel-based installations, including one for Scala dealers. Another client is a tire installation chain that will show an advertiser-sponsored informational broadcast to people in their waiting rooms. Pinnacle was very interested in a custom channel to promote their product Aladdin, a PC-based video switcher. However, they didn't like the fact that Channel 4000 only ran on an Amiga.

Incidentally, Scala has hired a number of ex-Commodore employees, many of whom were involved with Amiga research and development. It is well known that Scala is desperately searching for a way to effectively port Scala Multimedia and InfoChannel over to the PC platform. The problem? Windows can't handle it. I suspect that they are using the former Commodore brain power to design software and perhaps even hardware to run Scala products on IBM PC hardware, with Amiga or better performance. ■

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MultiMedia & beyond

Continued from page 117

meaningful interactive content. Perhaps some of those screenagers will come up with something stronger than those options to make this medium work. Canter suggested that everyone read Neal Stephenson's *Snow Crash* (Bantam, 1992) and pay special attention to The Black Sun in the Metaverse scenario to get an idea of what intrigues him.

How to get paid for producing these goodies was, of course, the question that some in the audience were most interested in. In the long run, this means "how does the consumer contribute toward the cost?" Millison noted that TV is already frequently paid for directly by the consumer through cable, although advertising covers almost all the cost of network broadcasting. Early trials are testing the three basic models that present transaction mechanisms can support: subscription, transaction (i.e. pay per view), and advertising supported. Future scenarios range from the extremes of paying people to watch the ads to calculating royalties for the content producers from information in the headers of each data packet as it zooms from server to subscriber.

COMPUTERS AS CULTURE

The interactive TV discussion was mostly folks of some considerable experience talking about what will be handed down from the corporate heights to younger generations. These were pretty hip people and clearly had some innovative thinking between them. Yet beneath the beneficent talk, I detected a certain business-as-it-has-always-been-done attitude, a subtle sort of top-down direction of culture, content, and technology with the ultimate purpose of multiplying the almighty dollar.

I was amused by the contrast with the Computers as Culture panel, which was composed of people who are now actually a little too old for the screenager tag but who basically grew up with computers. What I sensed from this discussion was something close to a "thank you, but we'll do it for ourselves." It was almost as though the whole concept of interactive TV is wrong, a "you just don't get it" situation that may yet upset the corporate applecart. It's a mindset that completely rejects all the dummying down and diversion of creativity associated with turning computers into televisions.

This was best hinted at by Andrew Mayer of Shattered Silicon's brushing off a question about graphic interface design with what amounted to "Who cares? Menus and command lines work fine." They do, and what this panel presented was the view that computers are a new factor in society and that old models just will not work in projecting their effects.

Next year, I'll attend Art Teco to check out more than the beer; the juxtaposition between these two approaches should lead to a ferment of its own. ■

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Product Spotlight

Continued from page 107

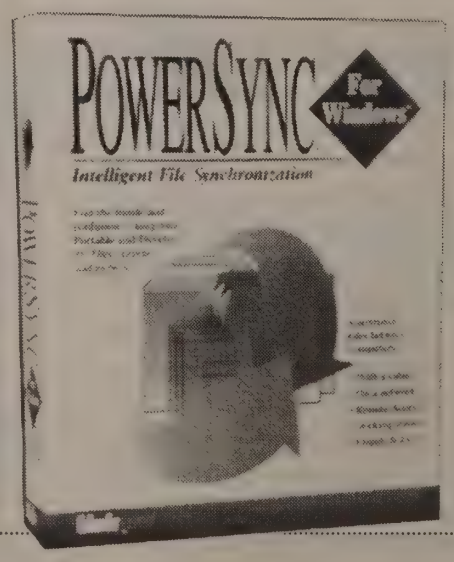
PC Software

Immersive Systems Meme

Meme, a development system for virtual world software, is intended for the development of networked multi-user virtual worlds. Using the TCP/IP suite of networking protocols, Meme is ready for use on the Information Superhighway. Meme stores virtual objects in modules that contain executable code and data. The modules are designed to be interoperable and will behave identically on any computer platform running. It is currently available for MS-DOS and runs on a 386 or better with a math coprocessor, VGA display, and at least 8MB of RAM. It produces real-time 3-D computer graphics at up to 50,000 polygons per second. The alpha release of Meme is now available for qualified developers. Immersive Systems, Inc., 4487 23rd St., #2, San Francisco, CA 94114. (415)641-VR4U. Email: immersive@kg6kf.ampr.org .

Linkpro PowerSync

PowerSync is a new Windows utility that allows users to easily synchronize their files between desktop and portable personal computers. It automatically synchronizes the most current version of any user-selected files and copies missing files from one PC to another. Unlike competitive products, PowerSync is installed only on the PC being used and not the one being accessed. It is compatible with most connectivity, networked, and operating system environments, including Novell or UNIX, that work with Windows 3.1. ($89.95) Linkpro, Inc., PO Box 6044, Irvine, CA 92716. 1-800-449-7962.



Complaints Desk For Windows

Complaints Desk for Windows allows companies to record, store, and retrieve information on customer complaints, requests, and suggestions. Users can customize complaint, product, and service codes to fit their business. Complaints Desk can generate graphs that display complaints by time period, complaint type, department, or product, and it includes a word processor to generate response letters and create reports. It is network compatible and will run on Novell, LANtastic, Banyan Vines, and 3COM LANs. ($179) Spectrum Computer Technologies, Inc., 2150 Liberty Dr., Niagara Falls, NY 14304. 1-800-879-3225.

Continued on page 159

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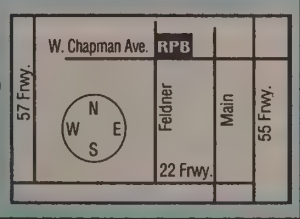

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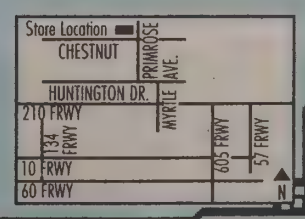

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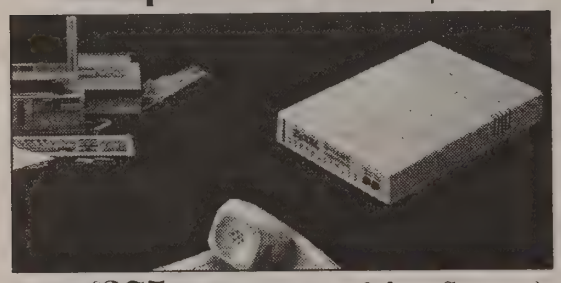

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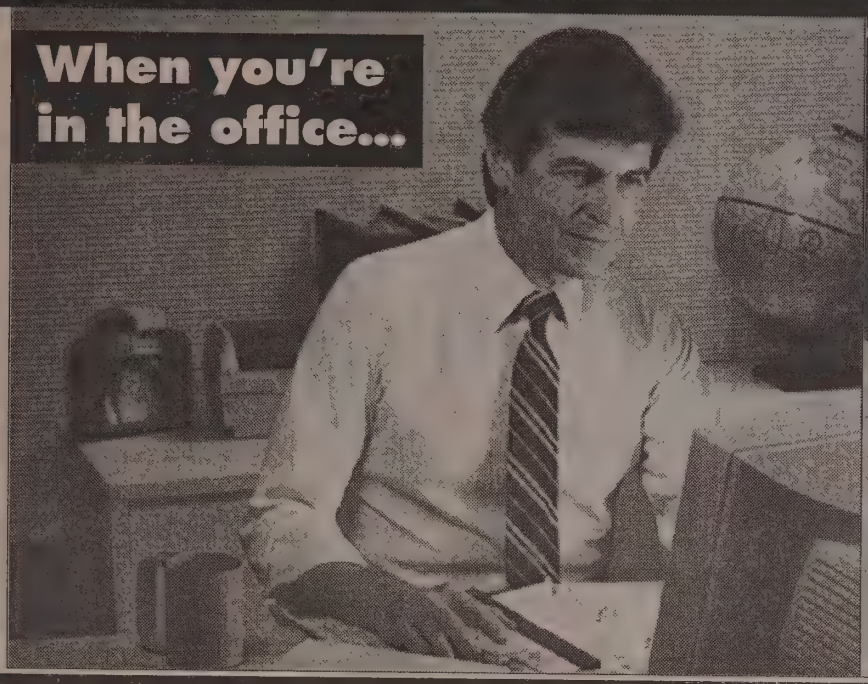

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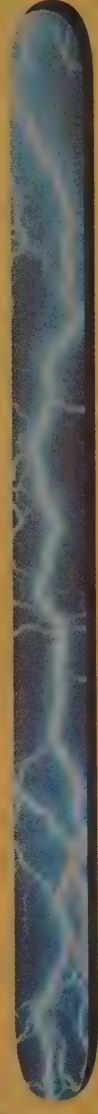

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- **8MB** RAM & Expandable to 128MB
- **Double-Speed CD-ROM Drive**
- One Floppy Drive (3.5" or 5.25")
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- **540MB** 10ms IDE Drive with 256K Cache
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- 2 Serial, 1 Parallel & 1 Game Ports
- Enhanced 101-key Keyboard
- Hi-Resolution 400 DPI Serial Mouse
- One-Year Parts & Labor Warranty

486/66 DX2	$1865
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Pentium/90	$2725

- 14400 Baud FaxModem with Software Add $110
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Resources

Calendar Of Events

Conferences, Shows, Special Events

July

July 9 Computer Marketplace. Sherman Square Entertainment Center, Reseda. National Productions. Call: 1-800-800-5600.

July 9 Computer Show And Sale. Fresno Fairgrounds, Fresno. MarketPro Shows. Call: (415)456-6730.

July 10 Computer Marketplace. Sequoia Conference Center, Buena Park. National Productions. Call: 1-800-800-5600.

July 10 Outdoor Computer Show And Swap Meet. CSU, Northridge. Advertising Concepts Productions. Call: Frank or Beth Perez, (805)520-1423.

July 16–17 Computer Marketplace. Pomona Fairplex. National Productions. Call: 1-800-800-5600.

July 21–23 1994 International Symposium On Mathematics/Science Education And Technology. San Diego. Association for the Advancement of Computing in Education. Call: (804)973-3987.

July 21–24 Imaging The Future: The Effect Of The Digital Revolution On Design Conference. Kauai, Hawaii. American Film Institute. Call: (213)856-7690.

July 23 California Computer Show And Sale. Anaheim Stadium. Robert Austin Corp. Call: (415)347-0100.

July 23 Computer Marketplace. Earl Warren Showgrounds, Santa Barbara. National Productions. Call: 1-800-800-5600.

July 23 Computer Show And Sale. Glendale Civic Auditorium. MarketPro Shows. Call: (415)456-6730.

July 23–24 International Computer Show And Sale. Riverside Convention Center (Raincross Square). R.G. Canning. Call: (213)587-5100, Event Ext. 4; (909)628-4236, Event Ext. 50.

July 24 Computer Show And Sale. Community Center, Oxnard. MarketPro Shows. Call: (415)456-6730.

July 24–29 Siggraph '94. Orlando, FL. Association for Computing Machinery. Call: (708)850-7843.

July 27–29 Object World Conference. San Francisco. Smith & Shows. Call: (508)820-8658.

July 30–31 Computer Mega Show. UCLA. American Mega Shows. Call: (818)961-3782.

July 30–31 Computer Show And Sale. San Diego Convention Center. MarketPro Shows. Call: (415)456-6730.

July 31 ACP Computer Swap Meet. 1310 E. Edinger, Santa Ana. ACP. Call: (714)558-8813.

July 31 Computer Show And Sale. Antelope Valley Fairgrounds, Lancaster. MarketPro Shows. Call: (415)456-6730.

August

August 1–5 Tools USA Conference. Santa Cruz. Smith & Shows. Call: 1-800-553-9939.

August 13 Computer Show And Sale. Glendale Civic Auditorium. MarketPro Shows. Call: (415)456-6730.

August 13 Computer Super Show. Bren Events Center, UC Irvine. ACP. Call: (714)580-6995.

August 14 Computer Show And Sale. Community Center, Oxnard. MarketPro Shows. Call: (415)456-6730.

August 14–19 SCO Forum '94. Santa Cruz. Smith & Shows. Call: 1-800-553-9939.

August 17–20 Fifth Annual Macintosh Summit Conference. UC Santa Barbara. UCSB Extension. Call: (805)893-4588.

August 17–21 ONE BBSCON. Atlanta, GA. ONE, Inc. Call: (303)693-5253.

August 20–21 Computer Mega Show. CSU, Northridge. American Mega Shows. Call: (818)961-3782.

August 20–21 Computer Show And Sale. Scottish Rite Center, San Diego. MarketPro Shows. Call: (415)456-6730.

August 21 California Computer Show And Sale. Anaheim Stadium. Robert Austin Corp. Call: (415)347-0100.

August 21 Outdoor Computer Show And

JULY 16–17

COMPUTER MARKETPLACE

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National Productions, which brought you the Los Angeles Computer Fair, presents the Computer Marketplace. Over three hundred exhibits with thousands of products are featured. Seminars through the weekend are open to all participants from beginner to the advanced computer user. Admission is $7, and shows are from 10:00 am to 5:00 pm at the Los Angeles County Fairgrounds (Fairplex), Pomona. Call: 1-800-800-5600.

JULY 21–23

INTERNATIONAL SYMPOSIUM ON MATHEMATICS/SCIENCE EDUCATION AND TECHNOLOGY

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The 1994 International Symposium on Mathematics/Science Education and Technology will serve as an international forum to disseminate information on the research, development, and applications related to technology in mathematics and science education for all levels; examine critical issues of, current research on, and major trends in using technology in math and science education; interact with colleagues on a variety of applications; and discuss strategies for teaching and learning math and science with technology. There will be papers presented, panels, tutorials and workshops, and demonstrations. Sponsored by the *Journal of Computers in Mathematics and Science Teaching* and the Computers in Math and Science Teaching Division of the Association for the Advancement of Computing in Education, call (804)973-3987 for more information.

JULY 23 & AUGUST 21

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SHOW DATES

July 9 Saturday	**RESEDA** - Sherman Entertainment Center From 101 Freeway, take Reseda off ramp, turn left (if traveling East) to Sherman Way, turn right, one block to Canby Street. 18430 Sherman Way.	**ADMISSION FREE!**
July 10 Sunday	**BUENA PARK** - Sequoia Conference Center Take the Beach Blvd. Exit off the 91 Freeway, go one block North to 7530 Orangethorpe.	**ADMISSION FREE!**
July 16 & 17 Saturday & Sunday	**POMONA** - Fairplex (LA County Fairgrounds) Exit Highway 10 at Fairplex Drive. Go North to McKinley, turn right. Turn Left on White Avenue to Gate 14.	Admission: $7.00
August 6 & 7 Saturday & Sunday	**POMONA** - Fairplex (LA County Fairgrounds)	Admission: $7.00
August 13 Saturday	**RESEDA** - Sherman Entertainment Center	**LAST SHOW ADMISSION FREE!**
August 14 Sunday	**BUENA PARK** - Sequoia Conference Center	**ADMISSION FREE!**
August 27 & 28 Saturday & Sunday	**POMONA** - Fairplex (LA County Fairgrounds)	Admission: $7.00
September 11 Sunday	**BUENA PARK** - Sequoia Conference Center	Admission: $5.00
September 17 Saturday	**SAN MATEO** - EXPO CENTER (San Mateo Fairgrounds) From Hwy 101 take 92 West. Take the Delaware Street Exit. Turn right on Delaware. Follow signs to Expo Center.	**PREMIER SHOW ADMISSION FREE!**
October 2 Sunday	**BUENA PARK** - Sequoia Conference Center	Admission: $5.00
*** October 8 & 9** Saturday & Sunday	**POMONA** - Fairplex (LA County Fairgrounds) ***MORE THAN 20 SEMINARS SCHEDULED FOR THIS SHOW!!**	Admission: $7.00
October 15 Saturday	**SANTA BARBARA** - Earl Warren Showgrounds Highway 101 and Las Positas.	Admission: $5.00

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Swap Meet. CSU, Northridge. Advertising Concepts Productions. Call: Frank or Beth Perez, (805)520-1423.

September

September 3–4 Computer Show And Sale. Ventura County Fairgrounds. MarketPro Shows. Call: (415)456-6730.

September 10–11 Computer Show And Sale. Glendale Civic Auditorium. MarketPro Shows. Call: (415)456-6730.

September 10–11 Computer Show And Sale. Scottish Rite Center, San Diego. MarketPro Shows. Call: (415)456-6730.

September 11 Outdoor Computer Show And Swap Meet. CSU, Northridge. Advertising Concepts Productions. Call: Frank or Beth Perez, (805)520-1423.

September 17 California Computer Show And Sale. Anaheim Stadium. Robert Austin Corp. Call: (415)347-0100.

September 24–25 Computer Mega Show. CSU, Fullerton. American Mega Shows. Call: (818)961-3782.

September 25 ACP Computer Swap Meet. 1310 E. Edinger, Santa Ana. ACP. Call: (714)558-8813.

October

October 9 Outdoor Computer Show And Swap Meet. CSU, Northridge. Advertising Concepts Productions. Call: Frank or Beth Perez, (805)520-1423.

October 11–13 Multimedia Expo. San Francisco. Smith & Shows. Call: (212)226-4141.

October 12–14 TeleCon XIV: Applications Of The National Information Infrastructure. Anaheim Convention Center. Applied Business teleCommunications. Call: 1-800-829-3400.

October 15–16 Computer Mega Show. Orange County Fair Expo Center. American Mega Shows. Call: (818)961-3782.

October 22–23 International Computer Show And Sale. Pasadena Center. R.G. Canning. Call: (213)587-1500, Event Ext. 4; (909)628-4236, Event Ext. 50.

Classes, Seminars, Workshops

July

July 9–10 Advanced Training Electronics: LS125 Seminar. Irvine. Diversified Technigraphics, Inc. Call: 1-800-457-5776.

July 13–14 Advanced Troubleshooting And Upgrading Techniques For The IBM PC And Compatibles Seminar. Anaheim. Data-Tech Institute. Call: (201)478-5400.

July 14–15 Understanding LANs Seminar. Pasadena. Data-Tech Institute. Call: (201)478-5400.

July 18–22 ISO 9000 Implementation Class. Los Angeles. Perry Johnson, Inc. Call: Tom Parker, 1-800-479-2020 or (310)607-0222.

July 18–22 UNIX Kernel Internals Class. Los Angeles. UCLA Extension. Call: (310)825-1047.

July 19–August 4 Multimedia On The Desktop: A Primer Of Authoring Programs Class. Universal City. UCLA Extension. Call: (310)825-9064.

July 21 Software Licensing Agreements Seminar. San Diego. Center for Advanced Professional Development. Call: (714)261-0240.

July 23 Accessing The Resources Of The Internet Class. Los Angeles. UCLA Extension. Call: (310)206-1638 or 206-7252.

July 23 Crossing The Boundaries: Creative Collaboration In Interactive Media Class. Los Angeles. UCLA Extension. Call: (310)206-1422.

July 23–24 Basic Laser Service Training: LS101 Seminar. Irvine. Diversified Technigraphics, Inc. Call: 1-800-457-5776.

July 24 A Day In The Trenches With Interactive Multimedia Producers And Designers From Knowledge Adventure Class. Los Angeles. UCLA Extension. Call: (310)206-1422.

July 25–26 Novell CNE Test Review Course. Los Angeles. Center for Advanced Professional Development. Call: (714)261-0240.

July 25–29 ISO 9000 Assessor/Lead Assessor Training Class. San Diego. Perry Johnson, Inc. Call: Tom Parker, 1-800-479-2020 or (310)607-0222.

July 30–August 20 Distributed Computing Using DCE Class. Los Angeles. UCLA Extension. Call: (310)206-1638 or 206-7252.

August

August 1–5 ISO 9000 Implementation Class. San Diego. Perry Johnson, Inc. Call: Tom Parker, 1-800-479-2020 or (310)607-0222.

August 6–7 Basic Laser Service Training: LS101 Seminar. Irvine. Diversified Technigraphics, Inc. Call: 1-800-457-5776.

August 8–10 Digital Transmission For Multimedia And The Information Superhighway Class. Los Angeles. UCLA Extension. Call: (310)825-1047.

August 10–12 Multimedia Compression: Applications And Standards Class. Los Angeles. UCLA Extension. Call: (310)825-1047.

August 15–16 Accessing The Internet Seminar. Irvine. Data-Tech Institute. Call: (201)478-5400.

August 15–18 An Introduction To C++: Object-Oriented Programming And Design Class. Los Angeles. UCLA Extension. Call: (310)825-1047.

August 18–19 Understanding TCP/IP Seminar. Irvine. Data-Tech Institute. Call: (201)478-5400.

August 18–19 Windows On Netware Seminar. Irvine. Data-Tech Institute. Call: (201)478-5400.

August 22–24 Software Safety: Principles And Practice Class. Los Angeles. UCLA Extension. Call: (310)825-1047.

August 31–September 1 Data Communications And Networking Seminar. San Diego. Center for Advanced Professional Development. Call: (714)261-0240.

September

September 24 Advanced Training New Machines: LS202 Seminar. Irvine. Diversified Technigraphics, Inc. Call: 1-800-457-5776.

September 26 Making Multimedia Deals: The How-To Seminar Bridging The Gap Between Hollywood's Talent & Technology. Los Angeles. Sensational Seminars, Inc. Call: Nina Steiner, (310)288-3425.

September 29–30 The Macintosh Survival Course. Los Angeles. Data-Tech Institute. Call: (201)478-5400.

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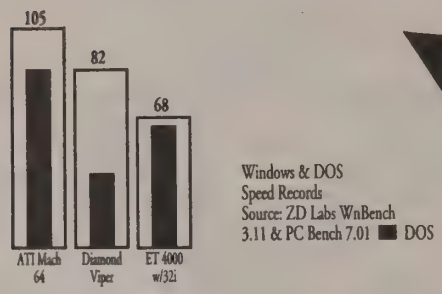
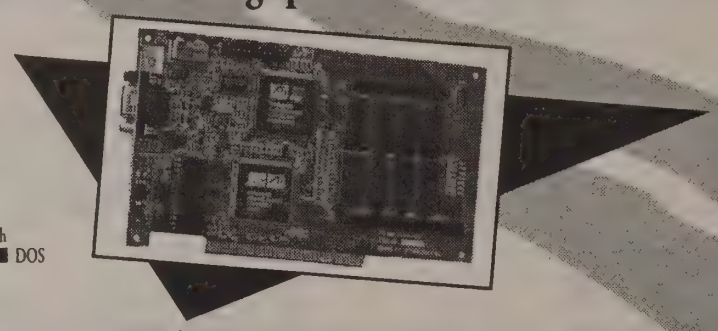


Windows & DOS
Speed Records
Source: ZD Labs WnBench
3.11 & PC Bench 7.01 ■ DOS



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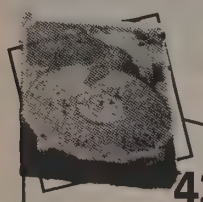

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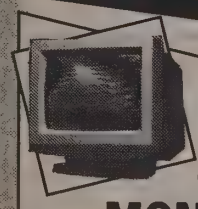

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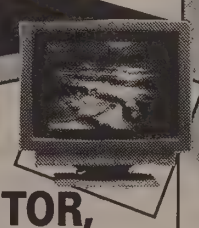

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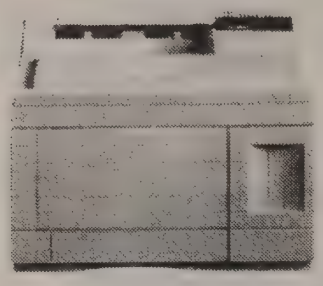

Featuring incredible **600 dots-per-inch output with a *new 12 page-per-minute print engine***, the new HP LaserJet 4M+/4+ is the fastest 600 dpi printer on the market! This quickness can be attributed to the LaserJet 4's fast RISC processor and I/O, making printing complex graphics a breeze! Add to this 45 internal scalable typefaces and 2MB of standard memory (expandable to 32MB), and it's easy to see that the LaserJet 4M+/4+ is *Ahead* of it's time!

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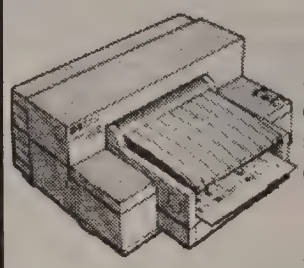

Think Ahead! HP's new DeskJet / DeskWriter 520 features 600 x 300 dpi printing for clear, sharp, professional-quality documents, plus HP's Resolution Enhancement technology for smoother, sharper text and graphics. Comes with the industry-leading 3-year warranty, plus HP's reputation for quality and reliability. This affordable new printer is the perfect solution to put you *ahead*!

For Macintosh

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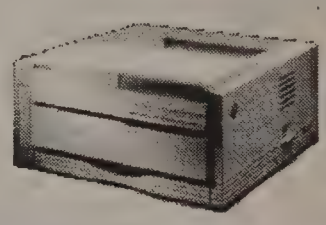
HP LASERJET 4P LASER PRINTER



The HP LaserJet 4P Printer features true 600 x 600 dpi printing. That's four times the resolution of conventional 300 dpi printers! Plus, this compact printer comes with 45 built-in scalable typefaces, enhanced HP PCL5 for seamless compatibility with the HP LaserJet 4 printer, and 2 MB of standard memory (expandable to 26MB). For a powerful printing solution that doesn't take up a lot of space, the HP LaserJet 4P is the smartest choice on the market!

For the PC

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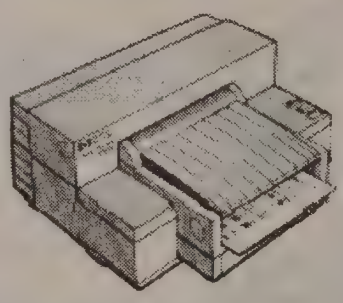

Using an advanced color printing system with HP's exclusive built-in ColorSmart technology, the new DeskJet / DeskWriter 560C delivers optimal color output. With resident dual cartridges for convenient black-and-color printing at the same time, clear 600 x 300 dpi black printing, and a variety of internal and scalable fonts, this new color printer is years *ahead* of its counterparts!

For Macintosh

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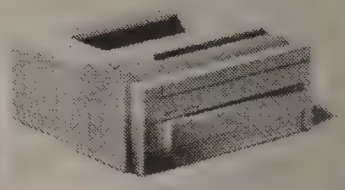
HP LASERJET 4L LASER PRINTER



Limited resources? Limited space? The HP LaserJet 4L is the perfect answer! This 300 dpi laser printer is HP's lowesr priced LaserJet ever. In addition to it's sharp looking output, the LaserJet 4L has an incredibly small 14" by 14.5" footprint; the perfect fit for your desk or shelf. Plus, it comes equipped with 26 built-in scalable fonts for professional quality documents. When it comes to value for your dollars, the HP LaserJet 4L can't be beat!

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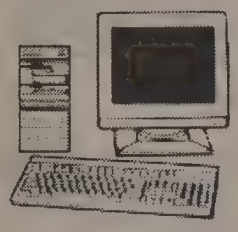

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- VL IDE Controller
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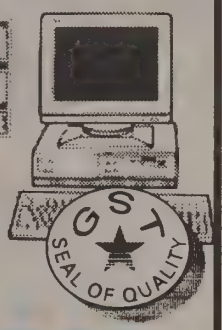
- VLB SVGA Video Card w/1MB
- 101 Enhanced Keyboard



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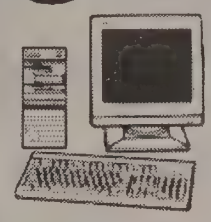

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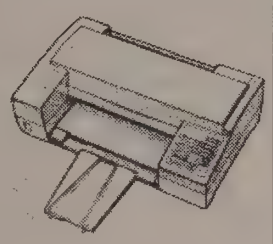

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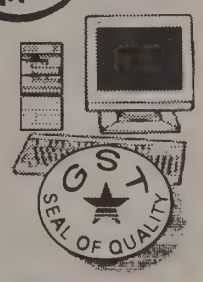

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- 4MB RAM
- ***345 MB Hard Drive***
- 256K Cache Memory
- FDC/HDC IDE Card 1:1
- 1.44M Floppy Drive
- 2 Serial / 1 Parallel port
- SVGA Monitor .28 w/1MB SVGA Card
- 101 Enhanced Keyboard
- MS DOS 6.2
- MS Windows 3.11
- Mouse

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Alternate Reality. (310)799-0380; (714)642-6256, 638-7249. 24hrs., 300–28,800. 32 lines. Friendly, adults only, Internet, MatchMaker, adult files, TradeWars 2002, parties, confidential. [Exp. #127.]

A-Men BBS. (213)257-3713, 294-2927, 651-0507; (310)366-7865; (818)785-1679. 24 hrs., 2400–14,400. Bi/gay/str8t/swinger adults only, fun parties, GIFs. Confidential—verification and fee mandatory. Sysop: John Whyman. [Exp. #125.]

Annex! BBS. (213)971-4686, (310)388-3818, (818)786-5600. 8-N-1, 1200–14,400. 66 lines. Games, files, chat, TradeWars, Internet, parties, and more! Adults only! Friendly! Sysop: Gregory Gooden. [Exp. #126.]

AOS. (213)566-6727, (310)838-8203, (714)750-8423, (805)522-4950, (818)969-8BBS. 8-N-1, 2400–14,400 local on request. 34-line family board. Chat, forums, games, tutors, Interlink, MajorNet/mail, friends and fun, more. Free trial. Sysop: Nancy Teppler. [Exp. #127.]

Asia America BBS. (310)326-1683; (714)772-5301; (818)284-4519, 989-2041. 8-N-1, 2400/9600/ 14,400. Focus on Pacific Rim culture and business, with Action Teams for business projects. Free. Sysop: Bob F. Howard. [Exp. #127.]

Atlantis, The Lost BBS. (714)256-1360, 828-6459; (818)859-6300, 579-4143, 798-4007. 2400–16,800. Ripterm EGA, multiline chat, games, forums, and fun. Sysop: Ron DeRuyter. [Exp. #127.]

Aussie BBS. (310)425-5710, (714)670-6500. All lines at 14,400. 30+ games, multiplayer Tradewars 2002, chat, huge adult library, and much more. Sysop: Mike Szabados. [Exp. #125.]

CompuShopping Net. (818)810-8947, 842-2873; (909)464-2750. 8-N-1, 2400–14,400. Lowest price CD-ROM titles sale, adult GIFs and shareware, free download. [Exp. #126.]

CPI BBS. (714)990-3341, (818)858-5730. 8-N-1, up to 14,400. Multiline, ULTRA-CHAT, matchmaker, classifieds, multiuser games, IBM/Windows/adult GIF libraries, and more. Free trial. Voice (818)858-5735. [Exp. #125.]

Crystal Palace. (310)472-2598, (818)765-2171. 8-N-1, 24 hrs., 300–14,400. 15+GB of GIFs, stories, shareware on CD-ROM; Netmail; msg. database; matchmaker; games; computer store. Sysop: Daniel Mathis. [Exp. #127.]

EDEN—The Electronic Garden. (310)421-2420; (714)548-1900, 530-6335, 528-7226, 472-9456. 24 hrs., 14,400. 25 lines. Adults only playground, featuring chat, games, email, forums, files, and live events. Free trial. Sysop: Daniel Vesely. [Exp. #127.]

Interludes BBS. (310)425-1659, (714)828-7093, (909)613-0307. 8-N-1, 24 hrs., up to 14,400. 13 lines. Chat, games, quality news files, Internet, Usenet, MajorNet. Free trial. Sysop: Angela Duarte. [Exp. #126.]

KBBS. (213)725-3047; (310)558-0145; (805)520-7323; (818)886-0872. 24 hrs. 68 lines, 60,000+ files, national chat all evening. Free trial. [Exp. #126.]

Korea America Online. (213)962-3634, (714)449-9373. 1200–14,400. 16 lines. Bilingual, Korean programs, information, chat, BBS in Korea list. $10/month, $80/year unlimited access. Sysop: Wayne Jeong. [Exp. #126.]

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BBS Spotlight

By John Wolcott

Avatar Online Systems

As the sheer number of BBSes grows, so do the features offered by many BBSes and the number of BBS user groups. Typically, subscription bulletin boards offer a wider range of features and greater user interaction—both online and socially—than free boards. If you really want everything from a system, the subscription board is the way to go.

This month's BBS Spotlight focuses on a very complete subscription system, Avatar Online Systems. This "family-oriented BBS," with its own unique features, is located in Azusa. "So where in the heck is Azusa?" you say. It really doesn't matter. They have access lines from several areas of the Southland which will make your call local or less expensive.

The system is supported by a 486/66 IBM PC-compatible modem server that is networked over NetWare 2.2 to a 386 IBM PC-compatible file server. The BBS is running Galacticom's MajorBBS v6.2d software. This software allows connection with ANSI and Rip graphics to provide a professional display. Avatar sports thirty-two incoming phone lines connected to twenty-seven 2400 baud modems and five 14.4k modems.

Avatar's features include Global, Teleconference, and Interlink chatting; file download libraries supporting IBM PC-compatible, Amiga, and Mac formats; networked and local discussion forums including a Missing Children forum; networked and local email; as well as educational tutoring and online games. The complexity and number of system features may overwhelm you, but this is only a temporary feeling. Exploring the system is really a pleasure. Avatar is maintained and administrated by Sysop Nancy Teppler, and system operators are very friendly and helpful. Online help from the system may be accessed from any part of the BBS.

Chatting on a BBS is the single greatest attraction to most users. This allows you to "talk" online with others currently connected. You may even invoke "action" commands that amount to typing in a word or two in order to display clever phrases for all to see. Avatar goes two steps beyond the ordinary BBS chat function with Global chat and Interlink. Global chat allows you to join a chat conference with others while accessing other parts of the BBS system. Interlink opens a whole new realm of BBS experience: reaching out to other BBS systems to allow live chat with users on those systems.

File download libraries include support for several platforms, although files available are primarily of the IBM PC-compatible format. The system boasts over four thousand files addressing almost any type of application you could desire. All common download protocols are supported, including Zmodem. If you haven't experimented with Zmodem downloading, you're in for a treat!

Discussion forums put you in touch with the opinions of other users and let you express yours on almost any topic you'd care to address. Since the system is linked with MajorNet, this will broaden your access to forums on a nationwide basis.

Email is another great way to reach others. Avatar's email is networked for providing communication with BBS users nationwide. The email feature on MajorBBS software is very user friendly and will prompt you through your message creation.

Since this is a family-oriented BBS and users of all ages will find topics of interest here, it follows that education is a topic of concern for operators. To this end, tutoring is provided online by various instructors. A tutoring schedule is available from the Chat Menu.

Continued

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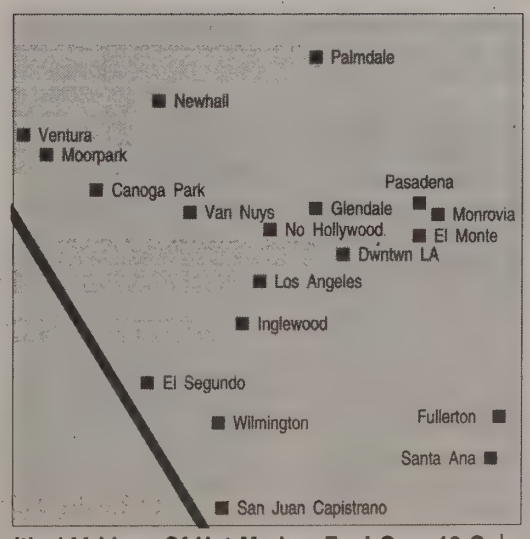

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Modemboy BBS. (310)659-7000, 417-5157; (818)846-3000, 996-7900. 24 hrs., 1200–9600. Gay/bi/curious, campy fun, community issues, chat, color GIFs, local events. Instant access. [Exp. #127.]

Modem Butterfly's Connection. (310)841-6900, 767-1010, 421-9231; (714)828-5500; (805)581-0700; (818)842-6900, 787-6900, 798-9900, 454-1919, 887-7900. 24 hrs., 1200–9600. Intelligent fun, local events, color photos of MBCers, instant access. Fee. [Exp. #127.]

Motherboard BBS. 1-800-TMB-3003. Serving all of So. Cal. 2GB library, 32 chat lines, games, public forums, matching, member photos, GIFs. Noise-free digital lines. [Exp. #127.]

Mr. Wonderful's Lair. (213)261-8055, (818)451-0874. 24 hrs., up to 14,400. Internet mail, Echo-mail, games, shareware, adult material. Free 14-day account. Sysop: Mr. Wonderful. [Exp. #127.]

Oasis. (310)799-1830, (714)897-0343. 8-N-1, 24hrs., 2400–14,400. Internet...email and newsgroups, CD-ROM files, business and educational support system. [Exp. #127.]

Odyssey Online. (213)934-6035; (818)358-6968, 247-8330. 108 lines. Full Internet access with T1 speeds, chat, shareware, hot GIFs, multiplayer games, and much more. Special promos. [Exp. #125.]

Prism. (310)799-0380; (714)454-9242, 638-7249, 642-6256. 8-N-1, 24 hrs., 300–28,800. 32 lines, 4.5GB. Internet, MajorNet, TradeWars 2002, adult areas, social events. Instant access. [Exp. #127.]

Pro-Line. (818)592-6083, 507-1042; (805)527-3350. 46 lines. Chat, matchmaking, lifestyles, email, files, fun, and more. Free trial. [Exp. #127.]

US Pompeii. (213)878-2801, 262-8110; (310)324-5782, 645-6969, 832-3526; (805)583-1180; (818)768-6745. 8-N-1, 24 hrs., 2400. Local/international email, forums, chatlinks. MatchMaker, libraries, databases. One month free. Sysop: Zippy Manus. [Exp. #126.]

213

LAAUGLine BBS. (213)387-1002. BBS of the Los Angeles Amiga User Group. [Exp. #126.]

LA Collect. (213)661-6299. 8-N-1, 24 hrs., up to 14,400. Civic network, serious talk, new BBS technology, all welcome. Free. Sysop: Roger Eaton. [Exp. #125.]

La Mirada's The Modems Delight BBS. (213)944-1221. 24 hrs., 1200–16,800. Multi-interest files, doors, games, and fun. Running PcBoard 15.1/10, Qmail4, echo-mail, FidoNet, RimeNet. Sysop: Ronald Dishon. [Exp. #125.]

216

Down To Earth. (216)353-0110. 24 hrs., 28,800. Six networks including Internet and FidoNet, 900+MB online, online games, cool ANSIs. Free. [Exp. #125.]

310

A.C.S. BBS. (310)318-9169. 24 hrs., 14,400. Specializing in graphics, 3D Studio, POVRAY, etc. Running WildCAT 3.9. [Exp. #125.]

AMULET:vc, A Collection Of Virtual Communities. (310)453-7705. 8-N-1, 24 hrs., 1200/2400/9600/ 14,400. CyberSEX, CYBERJournals, virtual reality/ worlds, Cyberpunk lifestyles. Sysop: Dan D. Gutierrez. [Exp. #127.]

California Home Buyers BBS. (310)763-7866. 8-N-1, 24 hrs., 2400. New residential home sales information, real estate-related articles, games, newsletter, and more. Sysop: Winnfort J. Myles. [Exp. #127.]

Compu-Net BBS. (310)822-0038. Internet access. SoCal's largest file and message board. CompuScans, CD-ROMs, dating, adult, windows, IBM, Mac. SoCal's full service modem center. [Exp. #127.]

The Great CHR$(27) BBS. (310)693-7907. 24 hrs., Programming files, all languages, shareware, code samples, tech talk. No fees or ratio. Sysop: Alan Selmanaj. [Exp. #126.]

Independent Filmmakers Forum. (310)425-0012. 8-N-1, 24 hrs., 2400/9600/ 14,400. Your connection to Hollywood, topical forums, chat, networking, electronic books, downloads, and more. Free trial. Sysop: The Administrator. [Exp. #127.]

Mommadillo's BBS And Breakfast. (310)438-7830. 24 hrs., 2400, 14,400 soon. WWIVNet @3075, WW4Net @1175, Tradewars. [Exp. #127.]

Moroni BBS. (310)392-3981. 24 hrs., 300/1200/ 2400/9600. Includes hundreds of Mormon church-related documents plus 650MB of shareware. Free. [Exp. #127.]

One World. (310)372-0987. Ecology, gardening, health, alternative news, international network. Free. [Exp. #126.]

Original Apple Corps BBS. (310)454-4660. Apple II support. Sysop: Ed Molina. [Exp. #127.]

the original off-off broadway BBS. (310)453-7038. 8-N-1, 24 hrs., 300–9600. Nonsubscription, text files/messages only. Using MajorBBS software and CompuCom Speedmodem. Sysop: James Gossage. [Exp. #126.]

South Bay Apple Mac User Group BBS. (310)792-8083, 792-0264. 24 hrs., Multiline, FirstClass. Administrator: Dr. Dave. [Exp. #125.]

The Spider's Web BBS. (310)416-9901. Games, recovery and 12 step msg. areas, BikeNet, ecology, spirituality, science and more. Free. [Exp. #127.]

Terminal Fantasies. (310)915-6135. 14,400. Eight nodes, full Windows multitasking, gigs of shareware, thousands of GIFs, email, and more. [Exp. #126.]

Upper Transylvania BBS. (310)515-6843, 515-6953. 24 hrs., 1200–14,400 Seven CDs online, Christian, family-oriented fun for the PC user. Free. Sysop: Ron Hoffman. [Exp. #127.]

Xchange-Net. (310)452-3374. 8-N-1, 300–9600+. All classified ads; a swapmeet of detritus, flotsam, scrap, and anything this side of Jupiter. Free. Sysop: Rex Brains. [Exp. #127.]

714

Alzheimer's BBS Of O.C. (714)731-3045. 8-N-1, 24 hrs., 2400. Info on day care, support groups, respite care services, articles, and related info. Non-sub, text files and msgs only. Sysop: Vladimir Ostapowicz. [Exp. #126.]

Bits And Bytes Of Orange. (714)921-0480, 921-0484 (28.8), 921-0587 (14.4), 921-0591 (14.4 & 2400). 24 hrs., 2400–28,800. 9+GB of shareware, games, email, adult section, and USA Today. Sysop: Barly Redstar. [Exp. #127.]

Calypso Online Services. (714)366-1355. 24 hrs., 28,800. 25 lines. An exciting new board including Internet and adult files. Free trial period/subscription. [Exp. #126.]

Check Six BBS. (714)362-8299. 8-N-1, 1200–28,800. Five nodes. Flight simulation msgs and files, Internet, Usenet. Limited free access. Sysop: Patrick Gost. [Exp. #125.]

Cloud Lake BBS. (714)768-3585. 8-N-1, 24 hrs., 14,400. Over 20,000 files, including woodcarving, Windows, DOS, games, astronomy, gardening, source code, and more. Sysop:

Continued on page 152

BBS Spotlight cont.

The online games provide significant fascination for many users. A variety of games are found on the Games menu. Of particular interest is Tele-Arena v5.0, which affords online game players interactive fantasy role-playing. On one occasion, upon logging on, I discovered fifteen users currently connected; twelve of them were in Tele-Arena! This is one very popular game.

Subscription rates range from $10 to $60 per month with discounts for longer term commitment and additional family members. Avatar Online Systems can be reached by calling (818)969-8227 with standard modem parameters of 8, None, and 1. Numbers to call from other areas are available online.

Avatar Online Systems proves to be an exciting and pleasurable BBS experience. This is definitely one you'll want to check out! ■

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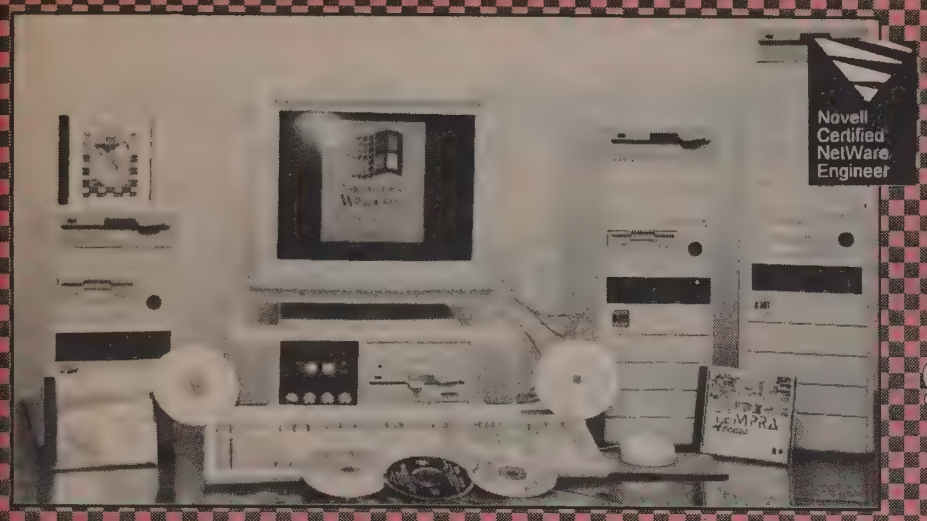

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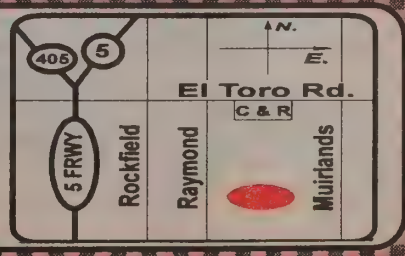

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- PCMCIA Slot
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Toshiba 3401E 200ms/2X	425
NEC CDR-3Xi Int 195ms/3X	495
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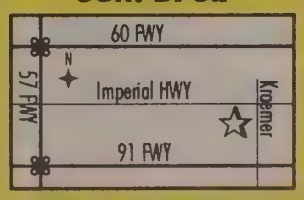

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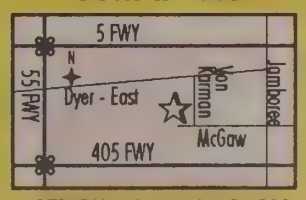

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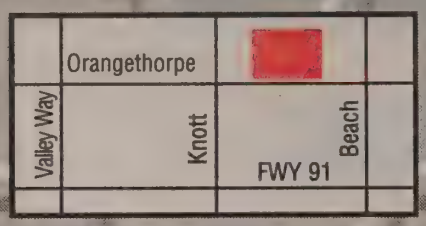

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  16 million colors
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- 2 serial/1 parallel/1 game ports
- Deluxe Minitower case
- 101 enhanced keyboard

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- Mid-tower case
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P5 66MHz with 258K cache	$1200/$1175
P5 60MHz with 256K cache	$1150/$1125
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486 DX2-66MHz with 128K cache	$575/$600
486 DX-33MHz with 128K cache	$450/$475
486 SX-33MHz with 128K cache	$320/$340
486 SX-25MHz with 128K cache	$285/$300
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486 DX-33MHz with 128K cache	$345/$330
486 SX-33MHz with 128K cache	$210/$200
486 SX-25MHz with 128K cache	$160/$155
AMD 486 VESA Local Bus (3 Vesa Local Bus slots, Pentium P24T ready)	
486 DX2-66MHz with 128K cache	$415/$400
486 DX-40MHz with 128K cache	$310/$300
CYRIX 486 VESA Local Bus M/B(3 Vesa Local Bus slots, Pentium P24T ready)	
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486 DX-40MHz with 128K cache	$315/$300
486 VESA local bus motherboard with 128K cache, NO CPU	$95/$90
from 128K cache to 256K cache upgrade on motherboard	$20/$20
386 DX-40MHz with 64K cache	$120/$115
386 SX-40MHz	$80/$75
1MB SIMM modules	CALL
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PCI Local Bus Add-on Boards	
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IDE hard drive controller	$47/$45
VESA Local Bus Add-on Boards	
Diamond *Stealth* 24VLB, 1MB SVGA card (16.7 mil colors)	$175/$165
Diamond Viper VLB, 2MB VRAM SVGA card (16.7 mil colors)	$360/$350
Trident, 9400 chipset, 1MB SVGA card (16.7 mil. colors)	$80/$78
Cirrus Logic, 5424 chipset, 1MB RAM (16.7 mil. colors)	$80/$78
IDE controller with AT I/O, 2 serial, 1 parallel, 1 game ports	$30/$28
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NE2000 Ethernet card, 10BaseT	$190/$185
ISA Add-on Boards	
Trident SVGA card with 1MB, 16 million color	$60/$57
16bit NE2000 Ethernet card	$80/$77
16bit NE2000 Ethernet card, 10BaseT	$85/$82
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Sound Blaster 16 Basic	$125/$115
9600/2400 baud internal fax/modem	$40/$38
14,400 baud internal fax/modem, v.32bis, v.42bis	$110/$100

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17" Impression 7 multi-freq. monitor, .26dp, 1280x1024 N.I, digital controls, flat screen, green PC ready	$690/$660
17" Sceptre CL-617 SVGA monitor, .26 dot pitch, flat screen, 1280x1024 N.I., flicker free 72Hz refresh, with digital auto-tracking	$750/$720
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	regular/CASH
Lite-On 4100 101 enhanced keyboard (non-click)	$22/$21
AST KB-101 enhanced keyboard (non-click)	$40/$37
Focus 2001 101 keyboard (click, hard dustcover)	$42/$40
KME keymouse 101 keyboard (click, track-ball built-in)	$62/$60

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Mid-tower case (230w ps)	$69/$67
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TEAC 1.44MB 3 1/2" FDD	$42/$40
TEAC 2.88MB 3 1/2" FDD	$110/$105
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250MB, Conner 250 Tape Backup System	$160/$155
Panasonic **Double spin** CD-ROM drive (300K/s, 320ms)	$170/$160

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Hewlett Packard DeskJet 500C Color InkJet printer	$395/$380
Hewlett Packard DeskJet 560C Color InkJet printer	$575/$555
Hewlett Packard LaserJet 4 Plus	$1425/$1375
Hewlett Packard LaserJet 4P	$940/$910
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Serial mouse, M.S. compatible, 3 buttons	$20/$19
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Microsoft bus mouse	$65/$63

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Continued from page 146

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Ed Barnes. [Exp. #126.]

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Global BBS. (714)373-1544. 24 hrs., 300–14,400. Political forums and organizations, worldwide VirtualNET, backpacking forums. No fees. Sysops: Chris and Jarome. [Exp. #126.]

Graphics Development Association. (714)651-1812. 8-N-1, 24 hrs., 14,400. Supports graphics, BMP, adult GIF, CAD, POV, ANSI. Free and subscription. [Exp. #126.]

Imagine-NET. (714)660-7738. 8-N-1, 24 hrs., 14,400. First Class Mac/Windows BBS, OneNet, four user groups, shareware. Free. Sysop: Douglas Nottage. [Exp. #127.]

Infinity BBS. (714)898-3236. 8-N-1, 24 hrs., 300–14,400. Internet, Usenet, satellite fed shareware, games, teleconference, call today! Sysop: Dan Minear (suitcase). [Exp. #125.]

InfoMat BBS. (714)492-8727. 24 hrs., 14,400. Features Electric Shorts online computer game reviews, type "readroom" at prompt. [Exp. #127.]

MacShak BBS. (714)373-0656. 24 hrs., 2400. Newly expanded Mac, amateur radio, consumer, and adult interests. Sysop: Dude B Narley. [Exp. #126.]

Matching Services, Inc. (714)840-5380. 8-N-1, 24 hrs., 2400–14,400. Search for mate by age, etc. Online photos. 1-900-844-6787,,,, 2222222222. $.99/min. Sysop: Jerry Seehof. [Exp. #127.]

OrnJuce. (714)778-1228. 8-N-1, 24 hrs., 300–14,400. BBS of the All Computer Assoc. of Orange Co. Supports Atari, Mac, PC, and others. Free. [Exp. #127.]

PC-Applications BBS. (714)432-9104, 557-8351, 557-6688, 557-6741. 24 hrs., 1200–14,400. 20,000+ files, 250 email conferences, Internet mail and newsgroups worldwide. Sysop: Dave Robinson. [Exp. #127.]

Real Estate Online. (714)969-9624. 8-N-1, 24 hrs., 2400–14,400. 14 lines. ANSI and RIP, free realty info + over 200 MajorNet forums, email, chat, games. Sysop: Doug Campbell. [Exp. #126.]

Sherlocktron. (714)492-0724. 8-N-1, 24 hrs., 2400. Sherlock Holmes BBS with lists of societies, publications, and purveyors. Sysop: Willis G. Frick. [Exp. #126.]

Software Gallery BBS. (714)721-8751. 2400–19,200. Largest file base in Calif. Games, utils, Win, DOS, CD-ROMs. Free access. Sysop: Joseph Brian. [Exp. #126.]

Viewlink BBS. (714)650-4612. 8-N-1, 24 hrs., 14,400. Latest shareware, hottest adult GIFs, temp jobs. 28¢ per hour. Sysop: Terry Andrews. [Exp. #126.]

XTASY. (714)256-1645. 300–28,800. 4GB shareware, 2GB adult files, fantasy sport

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Resources

USER GROUPS

AMIGA

LAAUG—Los Angeles Amiga User Group. Meetings: 3rd Wednesday, 7:30 pm. Veteran's Memorial Auditorium, Overland Ave. & Culver Blvd. Super SIGs, PD disks. Call: Gene Edwards, (213)384-8711. LAAUGLine BBS: (213)387-1002. [Exp. #129.]

SFVAUG—San Fernando Valley Amiga User Group. Meetings: 2nd Tues., 7:00 pm, "The Meeting Place" off the Food Court in Fallbrook Mall. Continuing the exploration of the Amiga in the area's most active Amiga Orphan support group. Call: Ernie, (805)526-8252. [Exp. #130.]

APPLE

Champions Of The Mac Proletariat (CHOMP). Meetings: 4th Thurs., 7:30 pm, Cal Poly Pomona. Question and answer, raffle of useful software, opportunity to purchase disks. Call: Craig Richards, (909)985-7385 or Mitch Cohen, (909)598-5766. [Exp. #129.]

Original Apple Corps. Meetings: 2nd Sun., West LA area. Apple II and Mac user group. Support for beginners through experts. Call: Fred Duffy, (310)450-3336. [Exp. #130.]

ATARI

All Computer Association Of Orange County. Meetings: 2nd Sun., 1:00 pm, Fullerton Savings, 12860 Euclid Ave., Garden Grove. Supporting Atari, Macintosh, PC, and other computer systems. Call: (714)960-6111. [Exp. #130.]

ATESIG—Atari 8-Bit SIG. Meetings: 145 Surf Pl., Seal Beach. Cooperative user group for model railroad applications. Call: (310)430-5433. [Exp. #130.]

South Bay All Computer Enthusiasts. Meetings: 2nd Tues., 7:30 pm, VFW Hall, 1865 Lomita Blvd., Lomita (1 block W of Western). All skill levels. Call: Danny or Mary, (310)834-0040. [Exp. #128.]

COMMODORE

Commodore Technical Users Group (C=TUG). Meetings: 4th Sunday, 1:00 pm, Senior Citizen Center, 170 S. Olive St., Orange. Public domain library, documents library, and magazine. Software and hardware help. Call: Daniel, (714)871-7570. [Exp. #128.]

South Bay Commodore Users Group. Meetings: 3rd Thurs., 7:00 pm, SCE Redondo Generating Station, 1100 Harbor Dr. (across from King Yacht Harbor), conference room. Support for 64/128 computers; receive or exchange information on programs, applications, or hardware. Call: (310)324-8357. [Exp. #130.]

CORELDRAW

CorelDRAW User Group (independent). Meetings: 2nd Mon., 7:30 pm, Jolly Roger Hotel, 2904 Washington Blvd., Marina Del Rey. Speakers on design and printing, CorelDRAW tutorials, and favorite shareware. Call: Michael, (310)545-1478. [Exp. #130.]

EPSON

Epson UG/Orange County. QX, PX, CP/M, VALDOCS—support, tech, periodical & disk library, parts. Call: (714)893-3305 or (310)430-4731. [Exp. #130.]

IBM & COMPATIBLES

All Computer Association Of Orange County. Meetings: 2nd Sun., 1:00 pm, Fullerton Savings, 12860 Euclid Ave., Garden Grove. Supporting Atari, Macintosh, PC, and other computer systems. Call: (714)960-6111. [Exp. #130.]

Greater South Bay PC User Group. Meetings: 2nd Thurs., 7:30 pm, Torrance Recreation Center located behind the main city library, Torrance. Visitors welcome. Call: (310)329-2804. [Exp. #128.]

Long Beach IBM PC And Compatibles Users Group. Meetings: 3rd Wed., 7:00 pm, Masonic Temple, 5155 E. Pacific Coast Hwy., Long Beach. Novice and experienced welcome, BBS, public domain library, newsletter, SIGs. $25/year, $35 for families. Call: Jim Wells, (213)439-7114. [Exp. #130.]

Los Angeles Computer Society. Meetings: 2nd Tues., 7:00 pm, Culver City High School, 4401 Elenda St., Culver City. Presentations from prominent software and hardware developers and Q&A sessions. Call: (310)471-2726. [Exp. #130.]

Orange County IBM PC Users Group. Meetings: 2nd Tues., 6:30 pm. Speakers, software, newsletter, BBS. Open to public, all welcome. Call: (714)990-0580. [Exp. #130.]

Pasadena IBM Users Group. Meetings: 3rd Wed., 7:00 pm, 2184 N. Lake Ave., Altadena. Speakers on hardware/software, SIGs, library, newsletter, and BBS. Call: Steve Bass, (818)791-1300. [Exp. #130.]

San Bernardino PC Users Group. Meetings: 1st Wednesday, Jack Brown Hall, Rm. 129, Cal State University, San Bernardino. Specializing in IBM and compatibles. Free admission. Call: Arthur Saltzman, (909)880-5755. [Exp. #127.]

Software Users Group Of O.C. Meetings: monthly in Irvine. Serves IBM compatible users who are new to computers. Call: (714)721-8751 (modem). [Exp. #129.]

South Bay All Computer Enthusiasts. Meetings: 2nd Tues., 7:30 pm, VFW Hall, 1865 Lomita Blvd., Lomita (1 block W of Western). All skill levels. Call: Danny or Mary, (310)834-0040. [Exp. #128.]

Thousand Oaks Personal Computer Club (TOPCC). Meetings: 4th Thurs., 6:30 pm, Goebel Senior Adult Center, 1385 E. Janss Rd., Thousand Oaks. Call: (805)494-8675. [Exp. #130.]

TUG-NET. Meetings: Every Thurs., 7:00 pm, Glendale Federal Bank, 7119 Topanga Cyn., Canoga Park. Ample parking. Call: (818)249-1629. [Exp. #126.]

Valley Computer Club. Meetings: 1st Wed., 7:00 pm, Burbank Board of Realtors Bldg., 2006 W. Magnolia, Burbank. BBS, PD library, SIGs, newsletter. All welcome. Fee, $4. Call: Estella McClintock, (818)848-1948 or Grayce Hruda, (818)842-3707. [Exp. #129.]

KAYPRO

KAYOS Kaypro User Group. Meetings: 4th Mon. of even months, 6:00 pm, El Segundo Library, Mariposa and Richmond streets. Call: (310)379-8339. [Exp. #128.]

MACINTOSH

All Computer Association Of Orange County. Meetings: 2nd Sun., 1:00 pm, Fullerton Savings, 12860 Euclid Ave., Garden Grove. Supporting Atari, Macintosh, PC, and other computer systems. Call: (714)960-6111. [Exp. #130.]

Champions Of The Mac Proletariat (CHOMP). Meetings: 4th Thurs., 7:30 pm, Cal Poly Pomona, grey building near administration building, rm. P2-7. Call: Craig Richards (909)985-7385 or Mitch Cohen, (909)598-5766. [Exp. #129.]

Los Angeles Macintosh Group (LAMG). Meetings: 3rd Tues., 7:30 pm, Dept. of Water & Power, 111 N. Hope St. Free meeting, everyone welcome. Call: (310)278-LAMG. [Exp. #128.]

Original Apple Corps. Meetings: West LA area. Apple II and Mac user group. Support for beginners through experts. Call: Fred Duffy, (310)450-3336. [Exp. #128.]

South Bay Apple Macintosh User Group. Meetings: Last Wed., 8:00 pm, El Camino College, MCSC Rm. 100, 16007 Crenshaw Blvd., Torrance. Call: (310)644-3315. [Exp. #128.]

West Orange County Macintosh User Group (WOCMUG). Meetings: last Tues., 7:00 pm, Emerson Elementary School, 2625 Josie, Long Beach (NE corner of Palo Verde and Willow). Come and join with other Mac users to share knowledge and experiences. Call: Lynn Goodrich, (714)892-8910; or Tony Muller (310)493-1240. [Exp. #127.]

UNIX

UUASC, The UNIX User's Association Of Southern California. Meetings: 2nd Mon., 7:00 pm, New Horizons Computer Learning Center, 1231 E. Dyer Rd., Santa Ana. Geared to professional and amateur users of all flavors of UNIX, including Linux. Call: Larry, (714)526-4347. [Exp. #130.]

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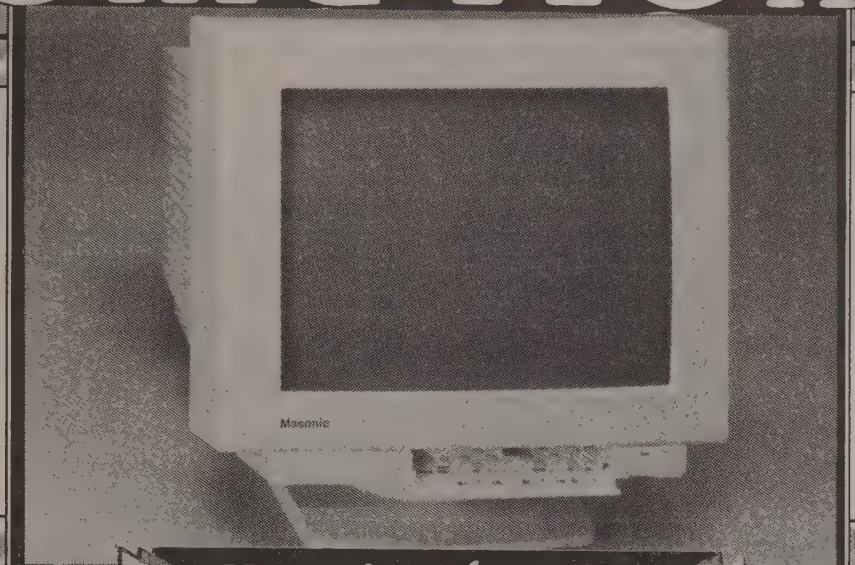

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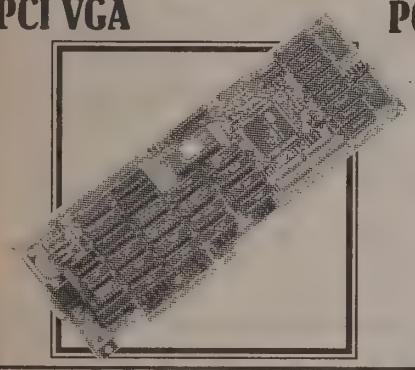

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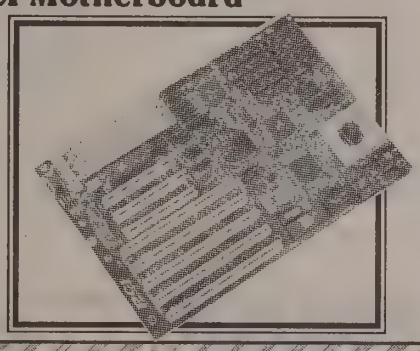

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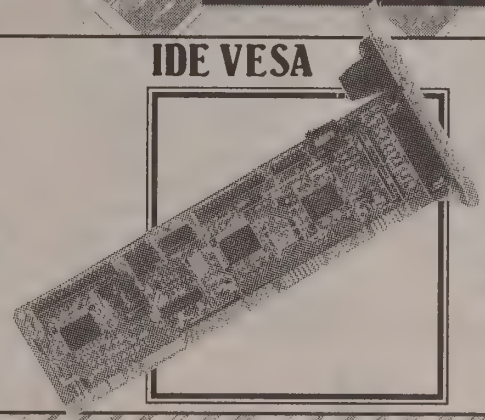

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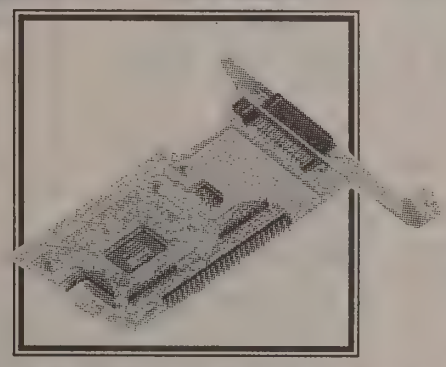

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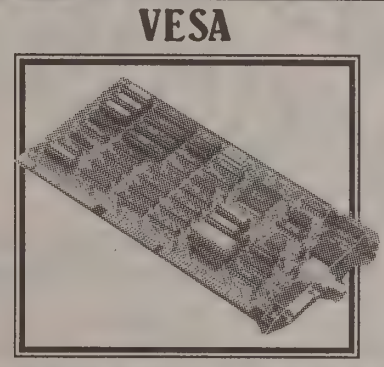

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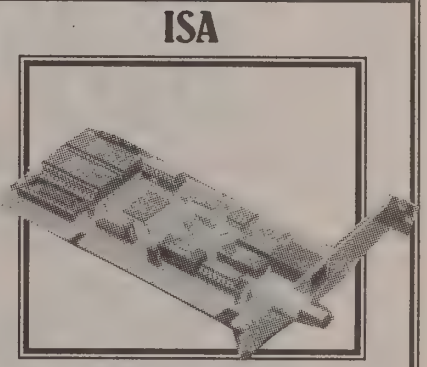

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leagues, travel agency, computer price guide. [Exp. #125.]

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Alternate Lifestyles BBS. (818)287-9285. 8-N-1. No one under 21 allowed, running six lines. We cater to all sexual lifestyles. Call for free trial. Sysop: Steven Keys. [Exp. #126.]

Blazin' Bytes BBS. (818)776-2777. 16 lines. 40 games, 50 pubs/SIGs, chat, warm family-style adult board, women welcome. Sysop: Barbara Mallut. [Exp. #127.]

The Catalyst/cyberspace west. (818)759-0366. 24 hrs., 1200–28,800. Multitasking, multimedia BBS. VGA graphics and sound. 386, Win 3.1 (enh) required. [Exp. #126.]

Compu-Ad Information Network. (818)858-2763. 2400–19,200. Online real-time graphic listings of real estate, loan info, school info, and more. Free. Sysop: Richard Belleville. [Exp. #125.]

DZBO's Monitor 1. (818)989-3286. 24 hrs., Graphics, games, virtual reality, classified ads, messages, and more. Free. Sysop: K. D. Dizibio. [Exp. #127.]

InvestorLink. (818)331-4611. 8-N-1, 24 hrs., 2400. Stocks, mutual funds, real estate, personal finance, daily news, commodity prices. Free. Sysop: Steve Painter. [Exp. #127.]

LA Free-Net. (818)776-5000. 8-N-1, 24 hrs., up to 14,400. 16 lines. Nonprofit community network with extensive Internet connections: newsgroups, gopher, email; and more. $10/year. Sysop: Alex Jalinous. [Exp. #127.]

Movers & Shakers—Parkinson's Center BBS. (818)776-2784. 24 hrs., For Parkinson's Disease patients, caregivers, families/friends of Parkinsonians, and medical community. Warm and personal. Free. [Exp. #127.]

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Southland Matchmaker BBS. (818)793-9108. 14,400. Internet email, Usenet newsgroups, MUD, chat. Enter "mm" at login prompt. Sysop: Joseph Gomez. [Exp. #126.]

Tempting Secret BBS. (818)810-8947. 8-N-1, 24 hrs., 2400/9600/14,400. ANSI & RIP, online adult GIFs, and more. Free trial. [Exp. #125.]

Wizardry BBS. (818)222-4444. 1200–14,400. Online games, downloads, uploads, adult GIFs, text files. Free. [Exp. #127.]

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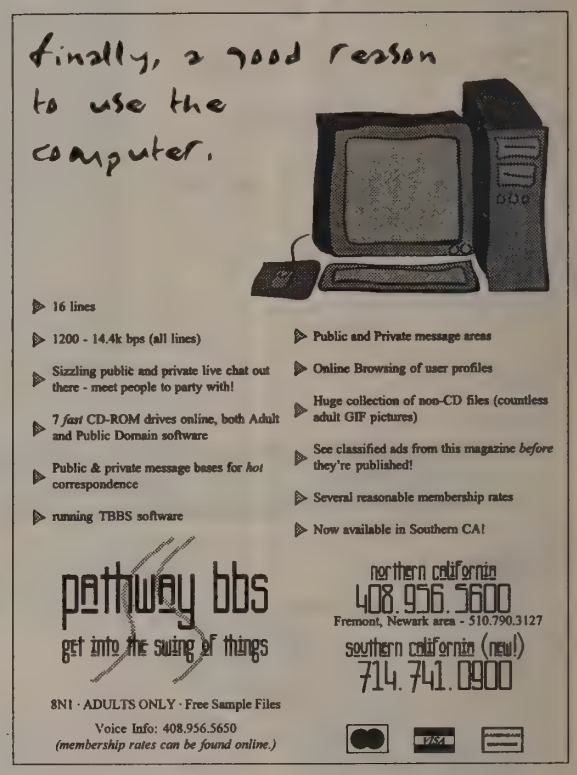
Classifieds Online. (909)599-6153. 8-N-1, 24 hrs. Read and enter your private party ads FREE! Cars to computers to real estate. New ads daily. Sysop: Al Graham. [Exp. #127.]

Secret Explorer BBS. (909)464-2750. 8-N-1, 24 hrs., 2400/9600/14,400. ANSI and RIP. Online adult GIFs and more. Free trial. [Exp. #125.]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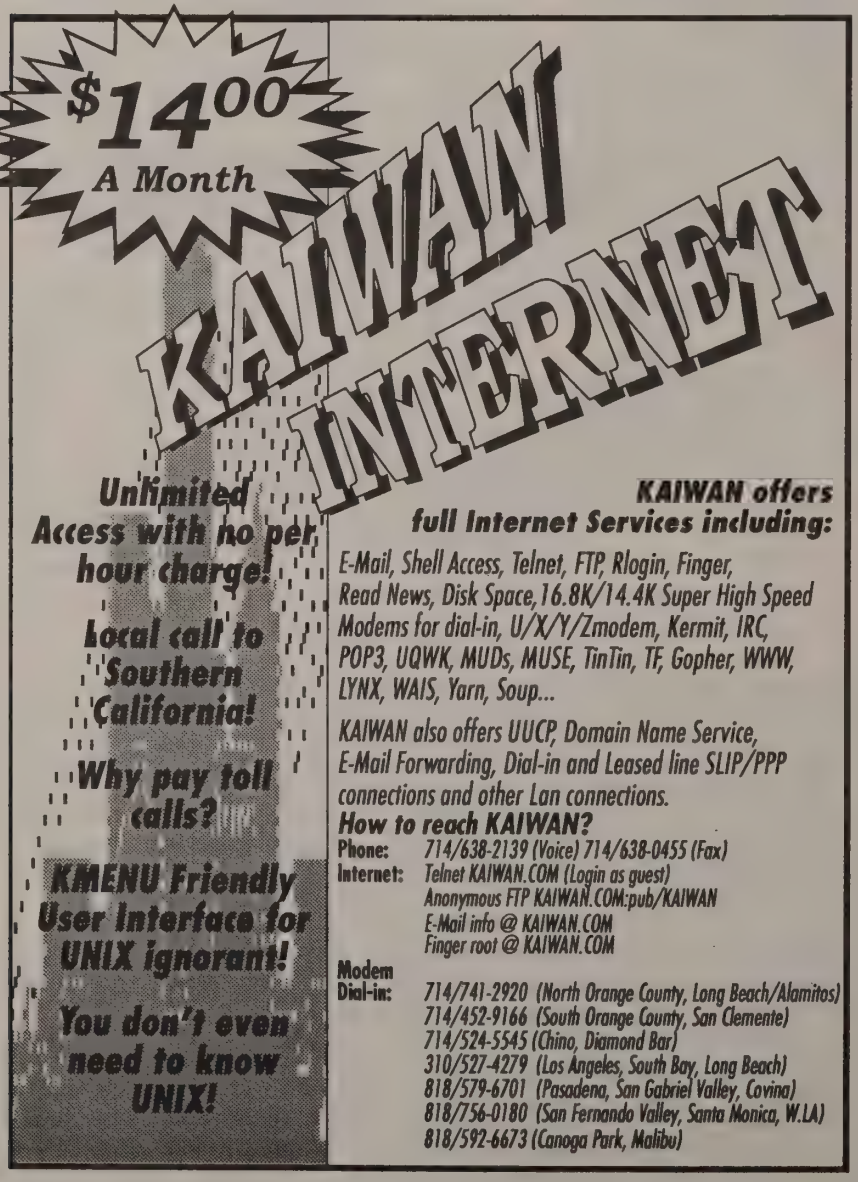
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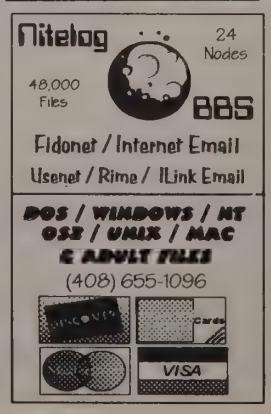

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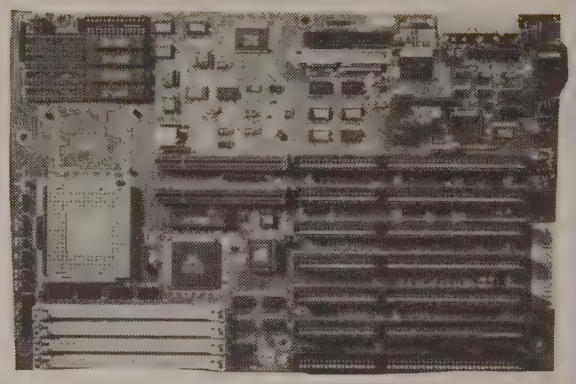

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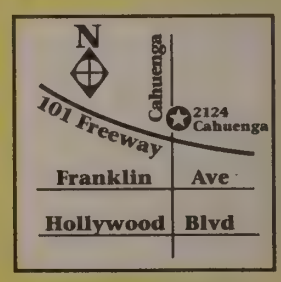

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Continued from page 130

Reviews

Game Reviews

Ultimate Domain

List Price: $39.99
Designed By: Thomas Zighem
Produced By: Microids
Published By: The Software Toolworks, Inc.
For: IBM 386, 2MB RAM, MS-DOS 5.0, VGA, Microsoft Mouse required, Sound Blaster
Reviewed By: Fred Haslam

This is a slightly different strategy game. In some ways it is similar to Civilization: you have communities which perform research and produce military units. But this game takes place on a different scale. The player spends a lot of time reassigning jobs to the various members of each community. Depending on the type of game you like, this could be either tedious or fascinating.

The primary game asks the player to build military units to search for seven crystals in this medieval world. The first nation to get them all wins. But the meat of the game comes in balancing resources. Should you build another mine before building a church or a garrison? Should you assign more people to harvesting wood or to making houses to attract citizens? Can you afford to use citizens as soldiers, or do you need more growth or research first?

The interface is similar to Populace with the exception that the game is turn-based rather than continuous. You might figure out many of the options available, but you will never do well at this game until you read the rules closely. The graphics are decent, with minor animation. The sound and music are nothing special.

As I said above, Ultimate Domain is a different sort of strategy game. One difference is that the production centers are much larger than the military units. For the era represented by Domain, this is realistic. This paucity of military units generates medieval style strategy. (The Software Toolworks, Inc., 60 Leveroni Court, Novato, CA 94949. 415/883-5157)

Hellcab

List Price: $49.99
Designed By: Pepe Moreno
Published By: Time Warner Interactive Group
For: IBM 386, 3MB RAM, Windows 3.1, mouse required, MPC CD-ROM@150k/s, SVGA, MPC sound card
Reviewed By: Fred Haslam

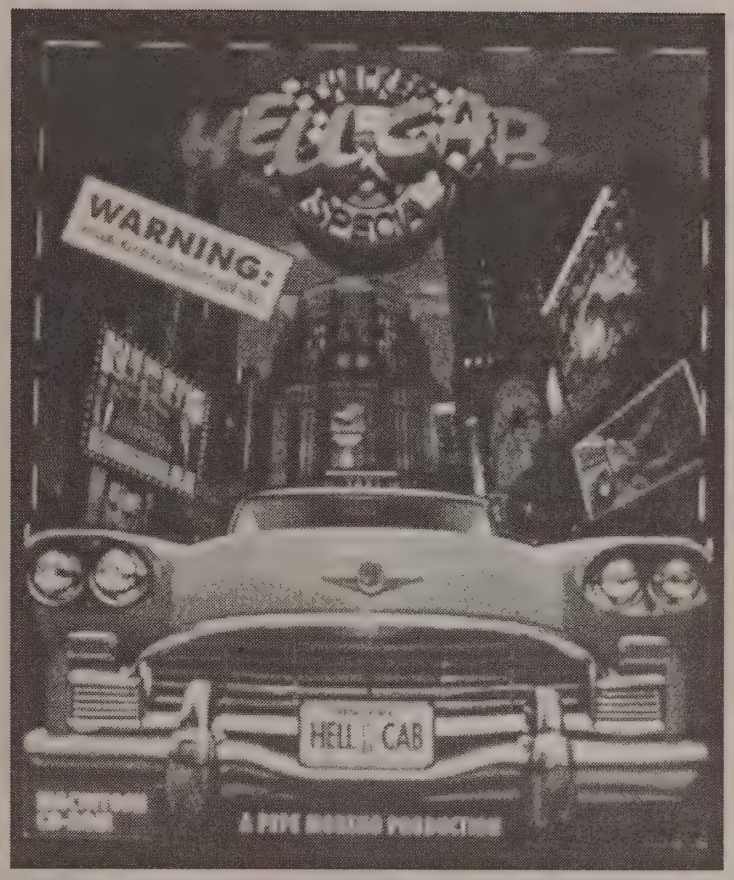
Hellcab is an imaginative premise that has been poorly implemented. The graphics are good, but the interface is slow and unresponsive. The puzzles are mundane or reflexive—and there are simply too few of them. For a CD game I expect more bang for my buck.

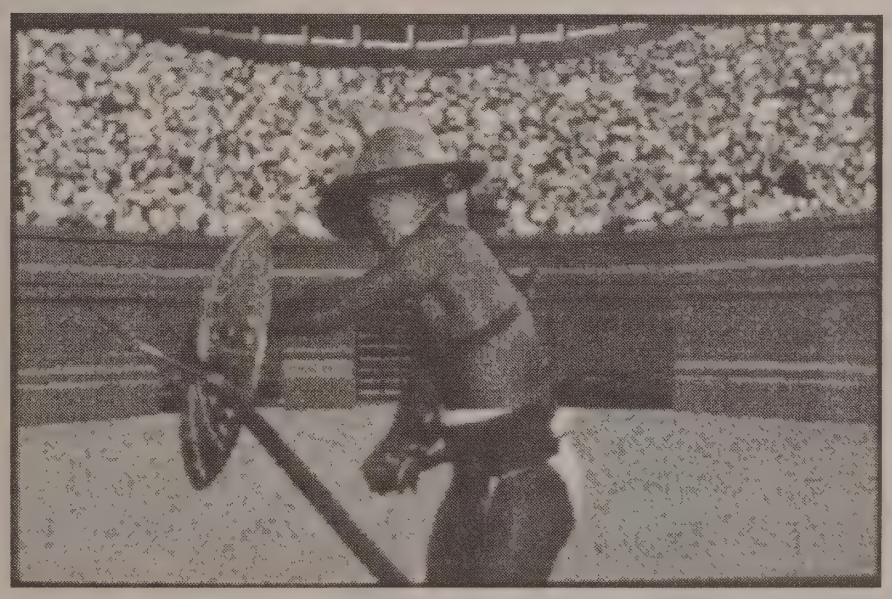
This adventure roams through four areas—the Empire State building, a Roman arena, some WWI trenches, and a stretch of Jurassic jungle. Each area contains about ten screens—all with limited actions and interactions. The game has a few puzzles that may keep you intrigued for up to an hour.

The graphics are very nice—high quality, sixteen colors. The animation is poor. The interface is mostly intuitive, but slow to react. The sound is digitized CD quality, but is sparse.

As an adventure game, Hellcab is small and annoying. It can be better described as a "tour"—i.e., come look at our cool pictures. This type of game worked fine for Myst and The Seventh Guest, but the graphics for Hellcab just aren't up to that quality. (Time Warner Interactive Group, 2210 Olive Ave., Burbank, CA 91506. 818/955-9999)

Continued on page 162





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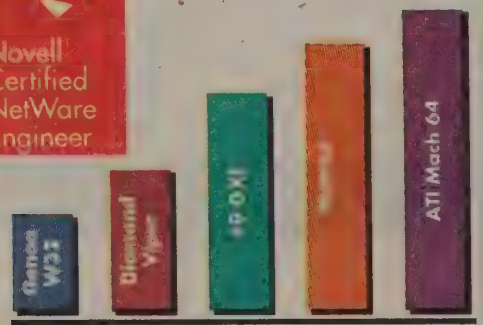

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Continued from page 159

Book Reviews

SSC Pocket References

Published By: SSC Pocket Reference Books
Reviewed By: Kevin Savetz

This happens to me all the time: I'm in the middle of writing a C program, or tweaking an AUTOEXEC.BAT file, or editing a file with the "vi," or otherwise steeped in thought in front of the computer—then I hit "The Wall." This is a sort of inexplicable mental block: What's the format for outputting a number in hex? What's the syntax for the DOSSHELL command? How do I move a block of text? Further work stops until I can remember that bit of information or find the answer in a towering stack of manuals.

A series of pocket reference guides published by SSC will solve this problem. SSC publishes a series of tiny books and fold-out pamphlets—these reference guides give you just enough information to get back on track. Each guide—ranging from ten pages to about fifty—covers one program, operating system, or standard. Some of the guides are tutorials (for getting beginners up to speed) and others are shorter "reference" works.

For programmers, there are guides for ANSI C, C++, and Fortran 77. (Another good resource for programmers is the 29-page *Software Copyright Book*, which shows how to copyright source code and visual displays.) UNIX users can find guides on System V, the vi editor, GNU emacs, the Korn shell, and Linux. Other users will appreciate the RS-232 card (with information about serial communications) and the MS-DOS command summary.

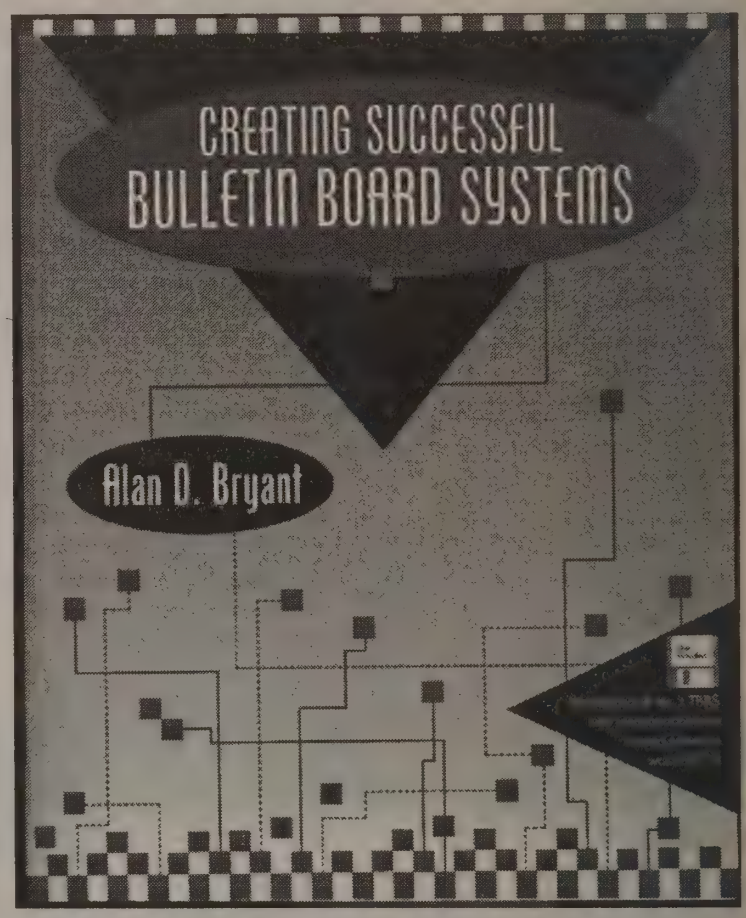
Prices vary depending on the size of the guide—the majority range from $3 to $10. These guides are small and complete, but will not replace the full manuals. (After all, they're not meant to.) They will, however, reduce the number of times you'll need to brave that leaning tower of tomes. (SSC, Inc., PO Box 55549, Seattle, WA 98155. 206/527-3385. Email: sales@ssc.com)

Creating Successful Bulletin Board Systems

Author: Alan D. Bryant
Published By: Addison-Wesley
List Price: $39.95
Reviewed By: Bill Gram-Reefer

According to the author of *Creating Successful Bulletin Board Systems*, Alan D. Bryant, there are an estimated 150,000 BBS operators representing a growth industry that expands 10 to 20% annually. But like restaurants that come and go each day, the spiraling BBS growth curve, pushed by entrepreneurs and hobbyists alike, comes complete with its own litany of false starts, zonko business plans, technical and legal problems, and poor capitalization. Noting these potential pitfalls, Bryant, director of marketing for eSoft Inc., has cobbled together a usable primer for the wanna-be system operator (sysop) that is worthy reading, too, for the experienced BBS operator.

Whether you're seeking fun or profit or both in your BBS, the chapters are designed to take the reader from the design, theme, and setup stage of creating a BBS, through to the finer points of technical requirements, expansion, billing methods, and day-to-day operation. Something of a *What Color Is Your Parachute?* how-to book, the many comparative tables throughout help the reader balance various options the author describes. The worksheets at the end of each chapter further help the reader analyze and organize. Insider tips speckled about provide sage warnings and technical explanations. A well-stocked appendix, glossary, and index round out this primer.



It comes complete with a clipped, two-line version of eSoft's popular TBBS software for IBM-PC and compatibles on a disk pasted on the inside-back cover. The program is upgradable to the full retail version for just $75. Not surprisingly, the DOS/TBBS background of the author limits the book's usefulness in areas of support for Macintosh-based systems that could be better served by scouring Bernard Aboba's *The Online User's Encyclopedia*, also published by Addison Wesley. But beyond these technical concerns, *Creating Successful Bulletin Board Systems* is loaded with enough platform-independent advice that it can be recommended to any reader.

Continued on page 166

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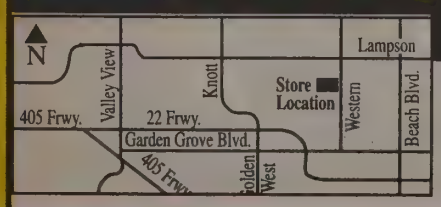

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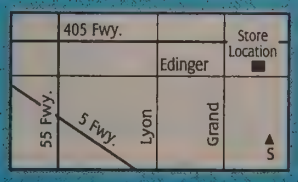

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Product Spotlight

Continued from page 162

Macintosh Software

Dynamic Effects Volume 1

Published By: Gryphon Software
List Price: $119
Reviewed By: Matthew Leeds

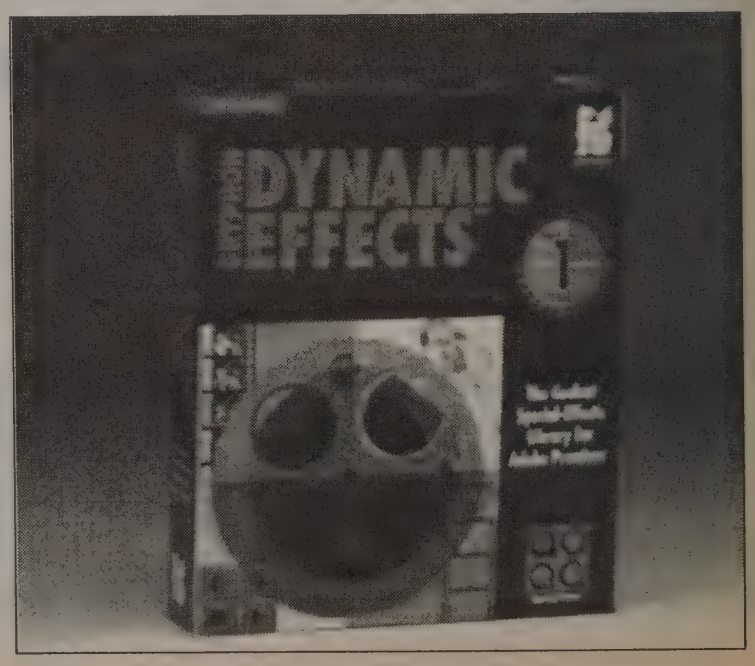
Premiere users can now look to Gryphon Software, past masters in Macintosh video effects, for effects plug-ins. This library of effects contains twenty plug-ins, two that provide improved versions of existing Premiere filters, and eighteen that offer new effects.

Dynamic Effects requires v2 or better of Premiere and either a fair amount of patience or a fast Mac, as some of the effects take time to process. The two improved filters (Iris and Wipe) allow you to feather the edges of two clips, creating a very smooth transition.

Several of the new filters are useful in creating an "old-time movie look." Offset Jitter simulates the movement of film in a projector. Dust adds random noise, mimicking dust on film. Luminance Jitter adds a flicker that simulates an old film projector. Duotone reduces a color image to two colors and can be used to create a sepia look.

The more interesting filters are those that create unusual effects. Channel Delay lets you delay each color channel individually, creating color ghosts wherever there is motion. Mirror splits the frame in two, mirroring one half of the frame in the other half. Room creates a 3-D box with each side showing the entire video frame.

Perhaps the most interesting is Tempus, which distorts motion in the video frame based on a grayscale map. Depending on the map, you can get effects that range from the strange to the downright weird. Gryphon demos a video shot on a rotating stage, filtered with Tempus using a simple gradient map. The motion is delayed down the screen with a resultant effect that makes the actors look like twisted taffy. This package is a must for hard core Premiere users. (Gryphon Software, Inc., 7220 Trade St., Suite 120, San Diego, CA 92121) ■



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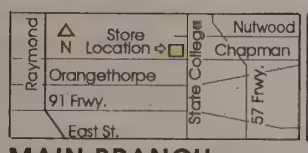

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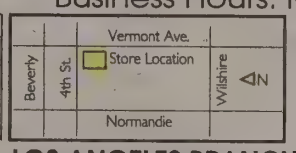

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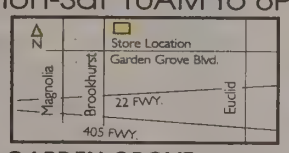

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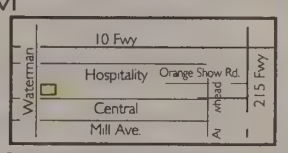

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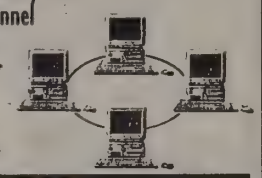

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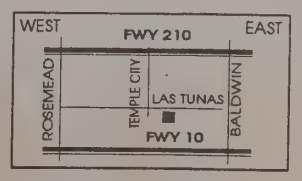

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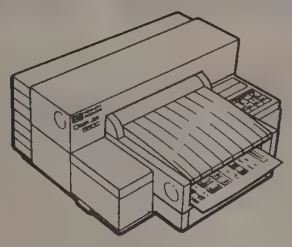

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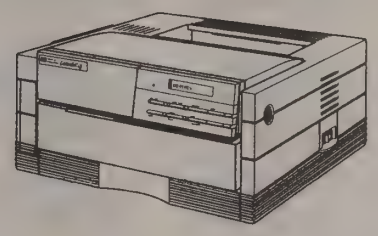

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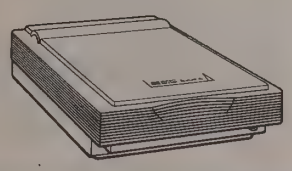

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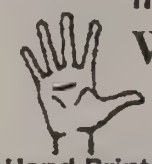

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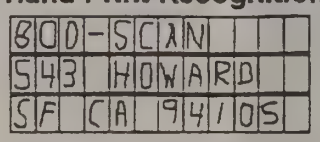

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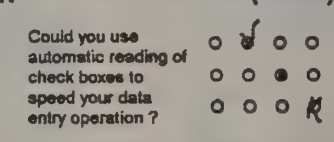

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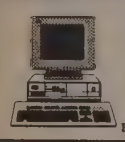

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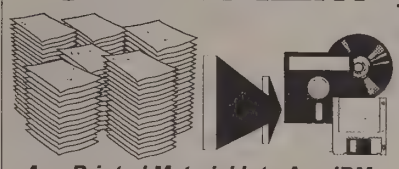

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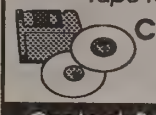

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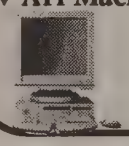

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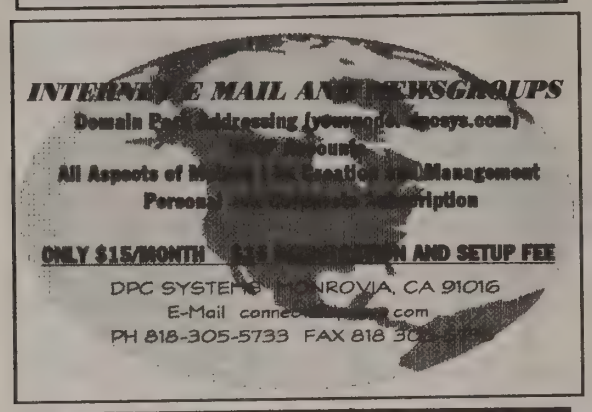
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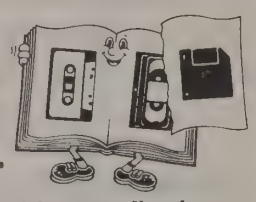

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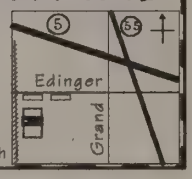

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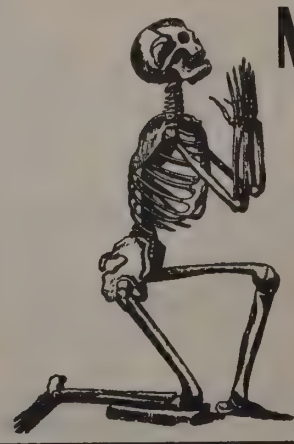

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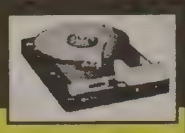

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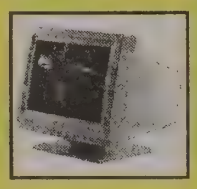

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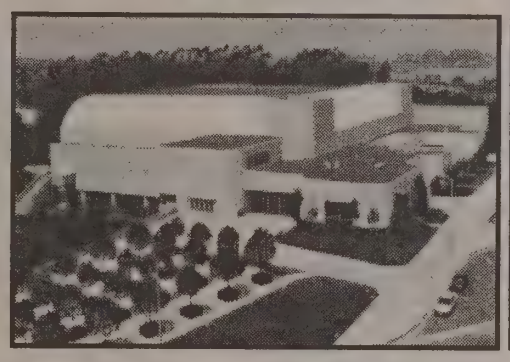

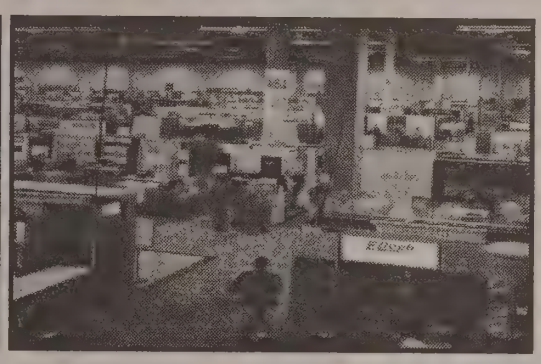

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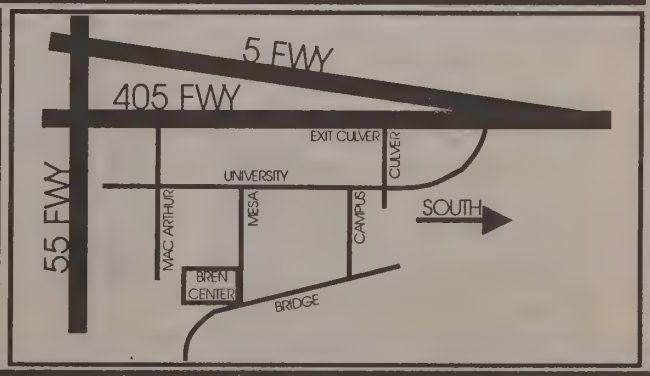

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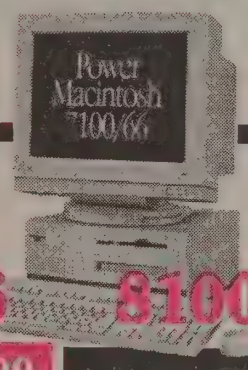

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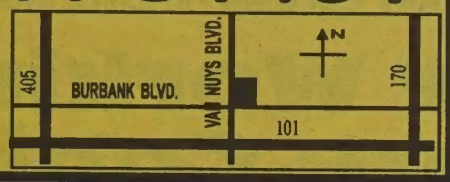

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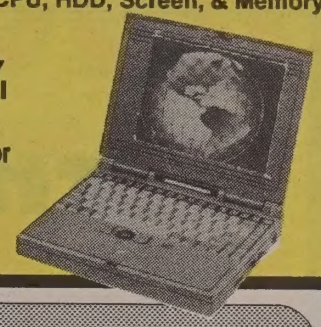

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Or
Why We're In The Mess We're In!

It was damp on Thursday when I got my appointment with the venture capital firm of Dewey, Cheatham, and Howe. Andy Howe was going to tell me the company's plans for the future and talk about some of the fine investments we can expect to see in the venture capital arena.

Arriving at the firm's Sand Hill Road offices on time for our appointment, I was told to wait, which I did for 2 1/2 hours. I was later informed that I should have taken this as a sign of respect. Most people are kept waiting a minimum of three hours, and in some cases a matter of days.

Archibald Cheatham stood up to explain what it was I was going to see. "As you know, Mr. Dvorak, we are the unassailable experts regarding the direction in which the computer industry goes. We make the trends happen. We're never wrong. And even when we are wrong, it's not our fault. Like with that pen-based nonsense, which was never our idea. That was from those hoserheads at Kleiner Perkins. I told them they were wrong, but would they listen? Nooooo. But we invested anyway, I know and it's a shame that..."

Andy Howe tugged on Cheatham's suit jacket and nodded toward the screen.

"Yes, well, anyway that's water under the bridge. Swine before pigs and all that nonsense. We see things differently today and that's frankly why we make the big bucks. As they say in Hollywood, 'Nothing can stop us now!' If you know what I mean."

The Wave Of The Future

After about ten minutes of this, he finally got to slide number one. He put the pointer on the screen and began. "This is a CD-ROM drive. Do you know what that is? It's not a disk drive, it's the future. The technology will take us into the twenty-first century. The company is CD-Luxe, Inc. The device is a high-speed patented quad head quintuple-speed drive that outperforms many hard disks for access. There is nothing like it."

I thought it seemed like a neat idea.

"More importantly we'll sell it for $100!"

Wow, I thought.

"And it will use our patented proprietary CD-ROM format and CD-Luxe caddy! *That*, my man, is where the profits are: licensing!"

I was taken aback. "I'm sorry. Are you telling me that this device won't play a regular CD-ROM? Just some specially made CD-ROM?"

The whole group gave each other high fives. "He's got it!"

Mark Dewey spoke. "Isn't that a great idea? People will have to license our special CD-ROM technology and the investors will make a ton of money from the never-ending fees. And see how quickly you grasped the concept."

"And the caddy will be another profit center," said Howe pointing one finger into the air as if to make a point.

I sat motionless and said nothing.

Cheatham produced the second slide. The pointer hit the screen. "This is a wireless radio mouse. It requires no receiver. It can actually transmit directly to the pins of the serial port using a newly discovered frequency modulation. It acts just like a regular hard-wired mouse."

Now, this was interesting, if true.

"The company is No-Mouse, and the mouse will sell for $19.95!"

Wow, this sounds great.

"Here's the beauty of it. The transmitter is designed so it can only run off a specially patented and microcircuited battery that costs $50 and lasts about a week. The mouse owners will have to pay about $200 a month to keep the mouse working. Is this genius or what?"

Dewey was nodding and smiling. "Yes, give away the shaver and sell the blades. Pure marketing genius."

The three men gave each other high fives all around once again.

"You guys are on a roll, for sure," I said as I bit my cheek hard.

"Ok," said Cheatham. "The last slide we want to show you. And we do expect to see some significant ink on this stuff. After all, you are very privileged to sit here with us, you know. But first you have to sign this nondisclosure." Cheatham pulled out a piece of paper and put it in front of me.

Mark Dewey spoke. "Isn't that a great idea? People will have to license our special CD-ROM technology and the investors will make a ton of money from the never-ending fees."

"I don't sign these things."

"Oh, OK." He threw it in the can and put the slide up on the screen anyway. The pointer was slapped up there as usual. "This is a piece of string. The company is called String Net. To be frank, this was our idea developed right here in the office. I have a son, about ten, who, it appears, is a genius."

The two partners both nodded as Cheatham continued. "Well, he showed me something phenomenal. He had these two tin cans. He poked a hole in the bottom of each can and ran a string through the hole and knotted it. When the two cans were pulled so the string was tight between them you could talk into one can and be heard from the other can if you put it to your ear. It was a fantastic discovery."

"Unbelievable," said Dewey. "Incredible," said Howe.

I was aghast.

Cheatham was pumped. "So I immediately figured that if sound can be so easily transmitted through the string, why not computer data? You see, Dvorak, this is why we are so good at what we do. We can make that jump in our thinking process. While a kid can invent something simple, it takes an adult to see the big picture. Hence String Net. We really don't want you talking about this for a while. We're in the process of getting a CEO to run this company. Do you think John Sculley would be interested? How about Steve Jobs, is he doing anything?"

"If I see them, I'll ask," I said.

"Good enough!" The three guys high-fived each other. "OK, now we do lunch! We'd love to invite you, Dvorak, but it's a private club. See you later. Betsy will show you out. Glad you're as enthused as we are!"

Betsy showed me to the door and gave me a bag of salted peanuts and closed and locked the door.

I thought the nuts were appropriate. ■

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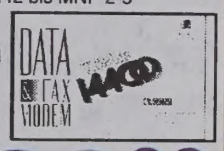

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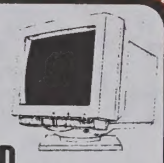

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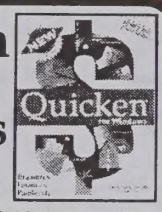

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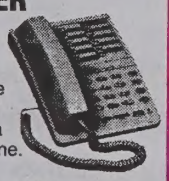

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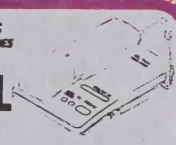

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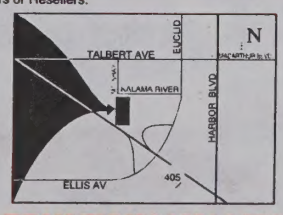

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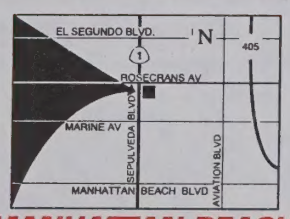

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